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A.M.A. SESSION *St Louis* MAY 15-19, 1939

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## HISTORICAL ASPECTS OF IRON THERAPY IN ANEMIA

CHAIRMAN'S ADDRESS


RUSSELL L. HADEN, M.D.

CLEVELAND


Iron is an essential part of the hemoglobin molecule. It is the most valuable remedy in the treatment of an anemia in which the primary defect is a deficiency in hemoglobin. While iron has been prescribed for almost three centuries, its therapeutic use is far older than the rational explanation of its action, and opinion concerning its value has changed greatly from time to time. Physicians long ago prescribed iron for chlorosis, a disease first described in 1520 by Johannes Lange. Later, others taught that medication with inorganic iron was worthless. Only recently have clinicians learned anew the most effective preparations and methods of administration.

To Sydenham[1] (1624-1689) belongs the credit for introducing iron into clinical medicine for the treatment of anemia. Iron salts had been employed by physicians for other purposes since the time of Hippocrates. The earlier applications of iron were more often symbolic, with the idea that iron was indicative of strength and was imbued with some peculiar force by Mars, the god of war. Iron was even designated mars by the alchemists. It seemed logical that a condition characterized by weakness, as is anemia, should be treated with a remedy suggesting power or strength.

Sydenham included chlorosis under the general head of hysteria, which he said "is the commonest of diseases next to fever." In speaking in 1681 of the treatment of the chlorosis of hysteria he said: "All which showed that the chief curative indication is the restoration of the blood—the fount and source of the spirits." He suggested bleeding and purging and continued:

> After these evacuations I comfort the blood and the spirit belonging to it by giving a chalybdeate 30 days running. This is sure to do good. To the worn out or languid blood it gives a spur or fillip whereby the animal spirits which before lay prostrate and sunken under their own weight are raised and excited. Clear proof of this is found in the effect of steel in chlorosis. The pulse gains strength, the face (no longer pale and death-like) a fresh ruddy color. Here, however, I must remark that with weak and wornout patients the bleeding and purging may be omitted and the steel be begun with at once.

Sydenham preferred to give the "steel in substance." His next choice was "iron or steel filings steeped in cold Rheinish wine." He also said that chalybeate water used for the same purpose was nothing more or less than iron in liquid form. Two prescriptions which he suggested contained from 7½ to 15 grains (0.5 to 1 Gm.) of iron filings to be given daily, which would certainly be effective in the treatment of an iron deficiency anemia.

For the next 150 years iron continued to be used for the treatment of anemia but with indifferent and varying results. Lemery and Geoffy in 1713 demonstrated for the first time iron in the ash of the blood.[2] In 1746 Menghini found that the iron of the blood could be increased by feeding iron-containing food.[2] These discoveries came long after Sydenham's therapeutic application of iron but provided a rational basis for the use of iron. Crocus martis was recommended in doses of 10 to 40 grains (0.6 to 2.5 Gm.) for dropsy and green sickness (chlorosis) in "A Compleat History of Drugs," translated from the French of Pierre Pomet by Lemery and Tounefort and published in London in 1712.[2] The crocus martis was prepared by exposing plates of iron to dew, by sprinkling iron filings with rain water or water and honey or by heating iron white hot and plunging it into melted sulfur.

Pierre Blaud,[3] however, first emphasized the specific action of iron in the treatment of chlorosis and suggested a method of iron medication which has never been improved on. Blaud's original paper appeared in 1831, many years before a red blood count was first done or a hemoglobin estimation was first made. Blaud even recognized the essential nature of chlorosis. He thought that the disease "arises from a faulty formation of blood as a result of which the blood is an imperfect fluid or the coloring matter is defective so it is no longer suitable for stimulating the organism and maintaining the regular exercise of its functions." He then said that iron preparations restore to the blood the most important principle which has been lost, its coloring substance, and suggested the use of a combination of iron sulfate with potassium carbonate which "has never foundered in our hands."

Blaud reported the treatment of thirty patients, all of whom were cured in from ten to thirty-two days, and said that previous failures had been due to the use of too small a dose of iron: "Who has not seen chlorotics pine away for an entire year although they have been subjected to the prolonged influence of iron


From the Cleveland Clinic.



Read before the Section on Pharmacology and Therapeutics at the Eighty-Ninth Annual Session of the American Medical Association, San Francisco, June 16, 1938.


1. The Works of Thomas Sydenham, translated from the Latin by Dr. Greenhill, edited by R. G. Latham, London, Sydenham Society, 1850, vol. 2, p. 97.

2. Christian, H. A.: A Short Sketch of the History of the Treatment of Chlorosis with Iron, Med. Libr. & Hist. J. **1**: 176-180, 1903.

3. Blaud, Pierre: On the Chlorotic Maladies and on a Method of Specific Treatment of These Affections, Rev. méd. franç. et étrang. **1**: 337, 1832.

water or of ferric hydrate?" He emphasized that his excellent results were due to the use of the preparation he recommends and the large dose.

Blaud's original prescription was as follows:

| | |
|---|---|
| Ferrous sulfate | ℥ ss |
| Potassium carbonate | ℥ ss |

Pulverize separately the two substances to a very fine powder, then blend very exactly. Add mucilage tragacanth, pound strongly, and make into a mass which will be divisible in forty-eight pills.

This prescription gives the equivalent of 5 grains (0.3 Gm.) of ferrous sulfate, or approximately 2 grains (0.1 Gm.) of ferrous carbonate, in each pill.

The method of administration suggested was:

| | |
|---|---|
| 1, 2, 3 day | one pill before breakfast and at bedtime. |
| 4, 5, 6 day | one pill three times a day |
| 7, 8, 9 day | two pills in the morning and evening |
| 10, 11, 12 day | two pills three times a day |
| 13, 14, 15 day | three pills twice a day |
| 16 and following days | four pills three times a day |

Blaud thus used from 6 to 25 grains (0.4 to 1.6 Gm.) of ferrous carbonate daily, or the equivalent of from 15 to 60 grains (1 to 4 Gm.) of ferrous sulfate. He suggested that the favorable action of his prescription was due to the finely divided state of the ferrous carbonate and the addition of potassium carbonate. He emphasized the two important principles of iron therapy—the use of a ferrous salt and large doses. Little has been added since to these fundamental principles of iron medication. A year after his original communication Blaud [4] criticized a formula suggested by Cotterau, saying:

I am so anxious that so precious a remedy which has never failed in my hands and which I consider as a specific in chlorotic diseases be employed in suitable doses to obtain the complete success from it. I am hastening to communicate to you the manner of preparation which I have always used.

He again described the dosage and repeated his original prescription.

Blaud deserves a prominent niche in the history of the development of iron therapy. He was born in 1774, at Nimes, graduated in medicine in 1804, practiced all his life in Beaucaire and died there in 1858.[5] Many modifications of his formula have been suggested, usually under the name "Blaud's pills," so it is often impossible to tell from the name just what the pill contains. The official method of preparation described in the French codex medicamentarius differs little from the original method of preparation. Pierre Blaud's nephew, August Blaud, a chemist, made a specialty of these pills [6] over the entire world under the name "veritable pills of Doctor Blaud." The formula in the British as well as in the American pharmacopeia differs from the original in composition and in the dose recommended.

For many years the fundamental principles of iron therapy introduced by Blaud were followed. Thus Felix von Niemeyer,[7] whose textbook of medicine was for many years the Bible of German medicine, stated that he followed the principles outlined by Blaud with great success. He used the following prescription:

| | |
|---|---|
| Ferrous sulfate | ℥ ss |
| Pulverized potassium carbonate and tartrate | ℥ ss |
| Tragacanth to make | 96 pills |

Each pill is equivalent to 2½ grains (0.16 Gm.) of ferrous sulfate. He suggested from three to five pills three times a day. He said of chlorosis:

Three boxes cures the most persistent case. At Magdeburg and Greifswald I often had to send my recipe for the pills for a great distance, my good fortune in the treatment of chlorosis —to which by the by I owe to the rapid growth of my practice —having given me a great reputation as the possessor of a sovereign remedy against the disease.

He went on to say that it was argued that large doses of iron were not necessary, but he continued:

The number of patients who have recovered in my practice through the employment of Blaud's pills after they had taken small doses of tincture of iron and wine of iron for years without positive effect and had repeatedly visited Pyrmont and Dubing is large enough to warrant the assertion that we shall cure chlorosis most speedily and surely by means of ferruginous preparations which can be tolerated in large doses and of these Blaud's pills stand highest in the list.

Immerman [8] in 1877 stated that "large doses [of iron] cure chlorosis far more certainly and quickly than small ones." He also emphasized that the dose is far more important than the compound selected. He recommended ferrous sulfate in a prescription and dosage similar to Blaud's.

Osler [9] in 1892 said "I have for years in the treatment of chlorosis used with the greatest success Blaud's pills made according to and given according to the formula in Niemeyer's textbook in which each pill contains 2 gr. of the sulphate of iron." He suggested from one to three pills three times a day.

About 1890 a definite change in iron therapy began to take place. Smaller doses of iron were used, poorer results were obtained and the opinion became widespread among clinicians that iron was of little value in the treatment of anemia. There were several reasons for this change. Bunge [10] taught most dogmatically at this time that inorganic iron was converted into sulfide and not absorbed from the intestinal tract and so could not have any beneficial effect on anemia. He suggested the use of organic iron only. Although MacCallum [11] demonstrated that inorganic iron was absorbed from the upper part of the intestinal tract and Stockman [12] proved that iron sulfide would relieve anemia, Bunge's teachings influenced iron therapy profoundly. Perhaps the most important influencing factor, however, in stopping the use of large doses of iron was the teaching of Quincke [13] and of von Noorden [14] that no more than 1½ grains (0.1 Gm.) of metallic iron daily was necessary in the treatment of chlorosis. These clinicians in

4. Blaud, Pierre: Antichlorotique Pills, Bull. gén. de thérap. **2**: 154-155, 1832.
5. Note on Pierre Blaud, Chron. méd. **21**: 316-318, 1914.
6. Humphrey, John: The Origin of Blaud's Pills, Pharm. J. **16**: 643-644, 1903.
7. von Niemeyer, Felix: A Textbook of Practical Medicine, translated by G. A. Humphreys and C. E. Hockley, New York, D. Appleton & Co., 1869, vol. 2, p. 76.
8. Immerman, H.: Cyclopedia of Practical Medicine, William Wood & Co., 1877, vol. 16, p. 560.
9. Osler, William: The Principles and Practice of Medicine, ed. 1, New York, D. Appleton & Co., 1892, p. 695.
10. Bunge, S.: Ueber die Eisentherapie, Verhandl. d. Cong. f. inn. Med. **13**: 133-147, 1895.
11. MacCallum, A. B.: On the Absorption of Iron in the Animal Body, J. Physiol. **16**: 268-297, 1894.
12. Stockman, R.: Treatment of Chlorosis by Iron and Some Other Drugs, Brit. M. J. **1**: 881-885 (April 29), 942-944 (May 6) 1893.
13. Quincke, H.: Ueber Eisentherapie, Volkmann's Samml. klin. Vortr. **129**: 313-354 (July) 1895.
14. von Noorden, K.: Chlorosis, in Nothnagel, C. W. H.: Encyclopedia of Practical Medicine, translated by Alfred Stengel. Philadelphia, W. B. Saunders Company, 1909.

turn were probably influenced by the demonstration that only a few milligrams of iron are actually metabolized each day.

As a result of such teachings, iron began to be used only in small doses, with little effect, so clinicians really believed that iron was of no value in the treatment of anemia. Williamson and Ets [15] as late as 1925 thought they had proved experimentally that iron does not influence anemia produced in rats and dogs by bleeding. They stated as a result of their experiments that "inorganic iron is absorbed and may be found in the liver and spleen but is not converted into hemoglobin" and concluded that "in the light of the foregoing experiments the administration of inorganic iron has no therapeutic value in anemia." Further experimental studies have demonstrated the error of these conclusions. Thus Heath, Strauss and Castle [16] have shown that the iron absorbed by a person with iron deficiency anemia is converted quantitatively into hemoglobin.

Recently the value of large doses of iron if iron is needed has been emphasized anew by numerous workers. One of the first was Lichtenstein,[17] who showed in 1918 that the anemia of the premature infant responded to large doses of iron. Meulengracht [18] in 1923 suggested large doses for the treatment of the anemia of adults on the basis of Lichtenstein's work. He used 45 grains (3 Gm.) of reduced iron daily, or thirty times the dose thought sufficient by Quincke and von Noorden. Even before Meulengracht, Lindberg [19] had shown that the anemia of influenzal infections responded to large doses of iron. Now every clinician recognizes the value of iron and the need for giving large doses.

The most recent development in iron therapy has been the renewed emphasis on the greater potency of ferrous salts. While any iron preparation is effective if given in large enough doses, very much less of the ferrous compounds needs to be taken.[20] Thus the two fundamental principles of iron therapy, large doses and the use of a ferrous salt, now generally accepted, only confirm what Blaud, Niemeyer, Immerman, Osler and others thought and practiced. These principles, forgotten by clinicians for many years, have only recently been learned anew. Such rediscoveries emphasize again our debt to the great clinicians of the past.

15. Williamson, C. S., and Ets, H. N.: The Value of Iron in Anemia, Arch. Int. Med. **36**: 333 (Sept.) 1925.
16. Heath, C. W.; Strauss, M. B., and Castle, W. B.: Quantitative Aspects of Iron Deficiency in Hypochromic Anemia, J. Clin. Investigation **11**: 1293-1312 (Nov.) 1932.
17. Lichtenstein, A.: Hamatologische studien on Frühgeborenen Kinder, Jahrb. f. Kinderh. **88**: 387-390, 1918.
18. Meulengracht, E.: Large Doses of Iron in Different Kinds of Anemia, Acta med. Scandinav. **58**: 594, 1923.
19. Lindberg, G.: Ueber anämie nach Influenza-Nebst einiger Bemerkungen zur Eisentherapie der anämien, Acta med. Scandinav. **56**: 162, 1922.
20. Witts, L. J.: The Therapeutic Action of Iron, Lancet **1**: 1 (Jan. 4) 1936.

**The All-Vegetable Diet.**—There have been careful and thorough investigations of the nutritive possibilities of the all-vegetable diet. There are various combinations of plant materials that will keep a human being alive, after a fashion, but no combination has been found which will provide "optimum" nutrition for the omnivorous animals that human beings are. While strict vegetarianism is possible it is unsatisfactory and more than a little difficult. There is no exact explanation of this except the generalized one that animal proteins have more nearly the same combinations and proportions of the amino acids which we need than do the vegetables.—Furnas, C. C., and Furnas, S. M.: Man, Bread and Destiny, New York, Reynal & Hitchcock, 1937.

# SURGICAL LESIONS OF THE ADRENAL GLANDS

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AND
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Tumors involving the adrenal gland may take their origin from the cells of the adrenal cortex, which originates from the mesoderm of the wolffian body or the medulla, which originates in structures giving rise to the sympathetic nervous system. The most frequently occurring adrenal tumor is that involving the cortex. Several excellent summaries of reported cases have appeared in the literature. To the signs and symptoms thought to be pathognomonic of such tumors, Gallais [1] has applied the name "le syndrome génito-surrénal," and Krabbe [2] that of "adrenal hirsutism."

In general, it may be said that one of the chief characteristics of tumors of the adrenal cortex is their tendency to produce changes in the sexual characteristics of the person affected. This characteristic is not what one would expect from a study of adrenal insufficiency, as the outstanding features of this condition are disturbances in electrolyte metabolism which usually are not associated with any marked alterations in the primary or secondary sexual characteristics. It is not at all clear why adrenal tumors should function in this fashion. Embryologic and chemical studies have thrown some light on the problem. Since the gonads and the adrenal cortices have a common embryologic origin, it is not surprising to find that the two structures have cells with common histologic characteristics and secrete hormones which have similar chemical formulas.[3] It is not inconceivable therefore that the cells of tumors of the adrenal cortex may secrete compounds which have the properties of male and female sex hormones in addition to the properties of the hormone or hormones which influence electrolyte metabolism and are essential to life. After removal of this type of adrenal tumor the secondary sexual characteristics have reverted essentially to normal, as described by Collett,[4] Holmes [5] and ourselves.

Although there are a variety of tumors which originate in the medullary substance of the adrenal gland, the most important surgically are the paragangliomas, which frequently are called "pheochromocytomas." They are benign in character and are characterized clinically by attacks of paroxysmal hypertension and the subjective symptoms associated with it. The similarity of origin of the sympathetic nervous system and the adrenal medulla explains paroxysmal hypertension, the characteristic symptom of these medullary tumors.

From the Division of Surgery (Dr. Walters) and the Division of Medicine (Dr. Kepler), the Mayo Clinic.
Read before the Section on Surgery, General and Abdominal, at the Eighty-Ninth Annual Session of the American Medical Association, San Francisco, June 15, 1938.

1. Gallais, Alfred: Le syndrome génito-surrénal; étude anatomo-clinique, Paris, 1912.
2. Krabbe, K. H.: The Relation Between Adrenal Cortex and Sexual Development, New York M. J. **114**: 4-8 (July 6) 1921.
3. The chemical similarity between the members of the group of male and female sex hormones has been appreciated for some time. More recently it has been shown that hormones of similar chemical structures, which are capable of maintaining the health of adrenalectomized animals, can be extracted from the adrenal cortex.
4. Collett, Arthur: Genito-Suprarenal Syndrome (Suprarenal Virilism) in a Girl One and a Half Years Old, with Successful Operation, Am. J. Dis. Child. **27**: 204-218 (March) 1924.
5. Holmes, Gordon: A Case of Virilism Associated with a Suprarenal Tumor; Recovery After Its Removal, Quart. J. Med. **18**: 143-152 (Jan.) 1925.

Excellent results have persisted for many years following removal of adrenal paraganglioma, as reported by Mayo,[6] Shipley,[7] the Porters [8] and Walters.[9]

### ADRENAL CORTICAL TUMORS

*Symptoms and Diagnosis.*—The symptoms depend on the age and sex of the patient at the onset of the illness, the type of tumor, the degree of its endocrine activity and the duration of the disease. Adrenal cortical tumors occur most frequently among young women, although in our series of eight cases two of the patients were children; one was 9 years of age and the other 2. In twenty of the reported cases the patients were males and in fourteen of these cases the patients were boys.

When a hyperfunctioning tumor occurs after puberty, the changes which tend to reverse the sex occur, such as virilism of women and feminism of men. By virilism is meant the appearance of masculine, and the recession of feminine, physical and mental traits. The menses cease, there is an excessive growth of hair on the face and body, the breasts atrophy, the clitoris enlarges and the entire habitus may change to the masculine type. On the other hand, when the disease originates among children, precocious puberty usually occurs. Among boys the precocious puberty is likely to be of the masculine type with the precocious development of external genitalia of the mature type. Among girls the puberty is heterologous; that is, it tends to progress along masculine lines with hypertrophy of the clitoris, deepening of the voice, masculine distribution of hair and, interestingly enough, sometimes with precocious menstruation. In one of our cases, the patient, who was a child aged 2 years, had had two or three menstrual periods.

Difficulty in diagnosis arises from the fact that in some instances the symptoms resulting from adrenal cortical tumors may resemble closely those that occur in Cushing's disease (basophilic adenoma of the pituitary body). The latter disease occurs for the most part among young women, and in contrast to adrenal cortical tumors (which vary in their clinical manifestations) produces a rather constant clinical picture. In pituitary basophilism the clitoris usually is not enlarged, but absence of this finding does not exclude a tumor of the adrenal cortex. At the present time there is no single clinical criterion which can be used to differentiate the two conditions. The consequence of this fact is that the presence of an adrenal cortical tumor should be excluded in all cases in which the symptoms of Cushing's disease are present. To our minds, this is most accurately done by exploration of the adrenal glands. At the same time, when it is desired, one can open the peritoneal cavity and examine the ovaries to exclude the possibility of masculinizing tumors of the ovaries (usually arrhenoblastoma) and, very rarely, granulosa cell tumors which result in the male type of hirsutism, amenorrhea and hypertrophy of the clitoris. However, such tumors practically never cause diabetes, hypertension, osteoporosis or the other incidental symptoms associated with adrenal cortical tumors.[10]

In children, tumors and inflammatory processes in the region of the pineal body and contiguous structures may be associated with sexual and somatic processes. Finally there are, in addition, many women who have varying degrees of the hirsutism, hypertension and debility for which no adequate basis can be found.

*Laboratory Aids.*—Routine laboratory studies have been of little aid in the differential diagnosis of these tumors. Frank [11] recently has reported a very high concentration of estrogenic substance, equal only to that encountered in pregnancy, in the urine of four patients who had adrenal cortical carcinomas. Negative reactions were encountered in specimens of urine obtained from fifteen patients who had some symptoms of pituitary basophilism or who had the adrenal cortical syndrome. In this group of fifteen patients one had a hypernephroma, one had an adrenal medullary paraganglioma, one had an adrenal cortical adenoma, and one had adrenal hyperplasia. Frank concluded that "it seems likely that adrenal cortical carcinoma alone of adrenal tumors increases the amount of estrogenic substance in the urine to as high as from 1,000 to 10,000 mouse units per liter, with a negative pregnancy test." In the cases in our series the results of this test were negative. It however was not performed in all cases. It would appear, therefore, that a positive Frank test would strongly favor a diagnosis of adrenal cortical carcinoma but that surgical exploration should not be deferred because of absence of large amounts of estrogenic substance in the urine. Substances which have the properties of the male sex hormone have been found by a number of workers in the urine of patients with adrenal cortical tumors. Use of this finding in diagnosis cannot be made until more information is available regarding the occurrence of such substances in the urine of normal women and patients suffering from diseases other than those involving the adrenal cortices.

Cahill and his associates [12] recently have emphasized a diagnostic procedure, introduced by Carelli,[13] by which the adrenal glands are delineated in roentgenograms which are made after the injection of air into the perirenal fascial space. Our experience with this procedure has been very limited and we are not in a position to pass final judgment on its merits or its limitations. In some of the cases reported in the literature, satisfactory visualization of an adrenal tumor by this method was obtained when the pyelograms were normal. It is interesting to note that in the case reported by Lukens and others [14] "the residual emphysema from the air injection was an added source of difficulty" during operation.

We feel that in case of doubt the adrenal glands should be explored surgically, provided the clinician is familiar with the early symptoms of acute adrenal insufficiency and if adequate facilities are at hand for treatment of this emergency should it arise. There are two objections to this point of view: First, an appreciable number of patients will be disappointed because no benefit results from the operation; second, it has been stated that in cases in which advanced symptoms

6. Mayo, C. H.: Paroxysmal Hypertension with Tumor of Retroperitoneal Nerve: Report of a Case, J. A. M. A. **89**: 1047-1050 (Sept. 24) 1927.

7. Shipley, A. M.: Paroxysmal Hypertension Associated with Tumor of the Suprarenal, Ann. Surg. **90**: 742-749 (Oct.) 1929.

8. Porter, M. R., and Porter, M. F., Jr.: Report of a Case of Paroxysmal Hypertension Cured by Removal of an Adrenal Tumor, Surg., Gynec. & Obst. **50**: 160-162 (Jan.) 1930.

9. Walters, Waltman: The Surgical Aspects of Suprarenal Abnormalities, editorial, Surg., Gynec. & Obst. **56**: 242-243 (Feb.) 1933.

10. The recent case reported by E. H. Norris (Arrhenoblastoma: A Malignant Ovarian Tumor Associated with Endocrinological Effects, Am. J. Cancer **32**: 1-29 [Jan.] 1938) is one of the few exceptions to this rule.

11. Frank, R. T.: A Suggested Test for Cortical Adrenal Carcinoma, J. A. M. A. **109**: 1121 (Oct. 2) 1937.

12. Cahill, G. F.; Loeb, R. F.; Kurzrok, Raphael; Stouat, A. P., and Smith, F. M.: Adrenal Cortical Tumors, Surg., Gynec. & Obst. **62**: 287-313 (Feb.) 1936.

13. Carelli, M. H. Y.: Sur le pneumopéritoine et sur une méthode personnelle pour voir rein sans pneumopéritoine, Bull. et mém. Soc. méd. d. hôp. de Paris **2**: 1409-1412 (Oct. 28) 1921.

14. Lukens, F. D. W.; Flippin, H. F., and Thigpen, F. M.: Adrenal Cortical Adenoma with Absence of the Opposite Adrenal: Report of a Case with Operation and Autopsy, Am. J. M. Sc. **193**: 812-820 (June) 1937.

of basophilism are present there is considerable danger of infection. In our experience this has not interfered with postoperative progress in cases in which cortical tumors were not found; in two cases Cushing's disease was discovered at necropsy months after the patient had been dismissed from observation. Certainly there is very little justification for the death of patients who receive roentgen therapy of the pituitary body when the lesion responsible for their symptoms is an adrenal cortical tumor which might have been eradicated successfully had the patient been operated on early in the course of the disease.

*Treatment.*—The treatment of these lesions is, of course, surgical removal of the tumor; this has been accomplished in seven cases at the Mayo Clinic without any mortality.[15] Two of these tumors were very large and weighed 600 Gm. and 800 Gm. respectively, while the others averaged approximately 2 to 4 cm. in diameter. Although microscopic examination showed early malignant changes in all the tumors, in five cases the tumor was definitely encapsulated and recurrence has not taken place. In the two cases in which the tumors were very large, penetration had extended beyond the capsule; the growth was attached to the diaphragm in one case and to the inferior vena cava in the other case. In both cases the lesions were malignant; there were signs and symptoms of recurrence and both patients died within two years after the operation.

The most important factor in surgical therapy, to our minds, is the anticipation, prevention and control of postoperative adrenal cortical insufficiency. This consists essentially of the preoperative and postoperative administration of potent extracts of the adrenal cortex[16] and parenteral and oral administration of adequate amounts of a solution of sodium chloride and sodium citrate and the administration of a diet that is low in potassium. These procedures tend to control the impending adrenal cortical insufficiency which has probably been responsible for the high mortality (50 per cent previously reported by Lukens and his associates, by Cahill and his associates and by Scholl[17]). The method outlined is essentially that which at the clinic has been found to be effective in controlling various degrees of adrenal insufficiency in Addison's disease and has been used in all our cases of suspected adrenal cortical tumors. Its effectiveness is illustrated by operative recoveries in seven cases; in two of the cases the adrenal glands on the opposite side were found to be atrophic. It must also be remembered that the outstanding characteristic of any hyperfunctioning adenoma is its tendency to produce its hormone irrespective of the needs of the body for this hormone. The remaining nonadenomatous endocrine tissue of the type from which the adenoma took its origin can be expected to hypofunction. This remaining nonadenomatous tissue may be functionally inadequate or be actually atrophic on histologic examination. By tiding the patient over the crisis with the administration of potent adrenal extracts and by concentrating the sodium ions in the body, it has been our experience that eventually the nonadenomatous endocrine tissue will regain its capacity to produce a sufficient amount of hormone to meet the needs of the body as regeneration occurs. In brief, postoperative adrenal insufficiency should be anticipated and should be prevented by continuous treatment throughout the postoperative period; during the entire postoperative period the patient should be watched carefully for any premonitory signs of acute adrenal failure. Among the more important signs of such failure are anorexia, hiccup, nausea, vomiting, weakness, insomnia, apathy or restlessness, an increasing pulse rate and a falling blood pressure. Pyrexia accelerates the development of adrenal insufficiency and is therefore poorly tolerated. These clinical manifestations may precede any material change in the chemical composition of the blood. The blood pressure should be recorded every four hours and the concentration of blood sugar, plasma chlorides and blood urea should be determined daily. If, at any time, the condition of the patient is the least suggestive of adrenal insufficiency, more vigorous treatment should be instituted or treatment should be resumed if it has been discontinued. It is not generally appreciated that fatal adrenal failure can develop within a few hours. In consequence of this fact it is easy for the physician to be lulled into a false sense of security. A good rule of thumb to remember is that danger lies in undertreatment rather than in overtreatment.

### ADRENAL MEDULLARY TUMORS

*Signs and Symptoms.*—Adrenal medullary tumors occur with much less frequency than those involving the cortex and few cases have been reported in the literature. Paroxysms of hypertension accompanied by vasomotor phenomena such as pallor, tachycardia, headache and apprehension are the characteristic symptoms associated with adrenal medullary tumors. Sweating is another of the vasomotor phenomena which occurs in some cases, although sweating does not occur after an injection of epinephrine. Precipitation of these paroxysms is obtained by undue physical and mental exertion and they can be precipitated experimentally by the "cold test"[18] (the introduction of the feet or the hands in water at a temperature of 4 C. for one minute). The appearance of the patient and the physical signs are of little help in making the diagnosis unless the tumor is of sufficient size to be palpated during abdominal examination or to depress the kidney abnormally, as shown by urographic examination; this depression was not evident in four cases observed at the clinic. In one case, which recently was reported by Borch-Johnsen,[19] the tumor had attained a huge size and weighed 3,000 Gm.

Patients with hyperfunctioning adrenal medullary tumors withstand surgical procedures very poorly. One of the characteristics of hyperfunctioning adrenal tumors is their tendency to cause sudden death. There are a number of instances on record in which the tumor was discovered accidentally at necropsy following sudden death after minor or major surgical procedures, such as extraction of a tooth, hemorrhoidectomy or amputation of a gangrenous extremity. Because of this

15. Walters, Waltman, and Kepler, E. J.: Adrenal Cortical Tumors and Their Treatment: A Study of Seven Operated Cases, Ann. Surg. **107**: 881-898 (June) 1938. Walters, Waltman; Wilder, R. M., and Kepler, E. J.: The Suprarenal Cortical Syndrome with Presentation of Ten Cases, ibid. **100**: 670-688 (Oct.) 1934.

16. We have been fortunate in having at all times an ample supply of potent extract prepared by Kendall. We have not had any recent first hand experience with any of the commercial preparations. Before using any one of the commercial preparations one should have had, if possible, some experience with its use in the treatment of acute adrenal insufficiency as it occurs in Addison's disease. The dosage necessary may be considerably larger than that recommended by the manufacturer.

17. Scholl, A. J.: Tumors of the Adrenal Cortex, J. Urol. **39**: 81-92 (Feb.) 1938.

18. Horton, B. T., and Brown, G. E.: Histamine-like Effects on Gastric Acidity Due to Cold, Proc. Staff Meet., Mayo Clin. **7**: 367-371 (June 22) 1932; Systemic Histamine-like Reactions in Allergy Due to Cold: A Report of Six Cases, Am. J. M. Sc. **178**: 191-202 (Aug.) 1929.

19. Borch-Johnsen, E.: An Operated Case of Paraganglioma Gland. Suprarenal. Sin. Associated "with the Suprarenal Sympathetic Syndrome," Acta chir. Scandinav. **80**: 171-180 (Nov. 30) 1937.

tendency, patients with hyperfunctioning adrenal tumors stand surgical procedures very poorly.[20]

*Diagnosis.*—Owing to the relative infrequency of tumors of the adrenal medulla, the possibility of their presence is not likely to be suspected. In one of the four cases seen at the clinic the diagnosis was made before operation and in another case the tumor was found following the unusual persistence of a hypertension subsequent to bilateral splanchnic resection. In the third case, which was reported by Dr. C. H. Mayo, the tumor was suspected preoperatively and was found at abdominal exploration. These three patients survived and no further paroxysms of hypertension have occurred. In the fourth case the tumor was found at necropsy. In one of these cases the hypertension was somewhat continuous rather than paroxysmal. It must be remembered that paroxysms of hypertension occasionally may occur in the absence of medullary cortical tumors. We have seen one such case in which the only important postmortem finding was petechial hemorrhages in the pons.

Thus far we have referred to the most important surgical lesions of the adrenal medulla, namely the paragangliomas, which are benign in character. Another benign tumor, the ganglioneuroma, produces no characteristic clinical symptoms and is usually found unexpectedly at necropsy. Malignant tumors which involve the adrenal medulla are the neuroblastomas which metastasize early to the liver and lungs in the adult and to the skull and long bones in children. The diagnosis of these lesions is usually made only after metastasis has occurred. Surgical treatment directed toward their removal is without benefit on this account. The usual preparation of patients for surgical procedures is all that is required preliminary to operation in cases of adrenal medullary tumors.

### SURGICAL APPROACH TO THE ADRENAL GLANDS

Although transthoracic, transpleural and retroperitoneal approaches to the adrenal glands have been carried out, in our opinion the approach which gives the best opportunity for minute and careful inspection of the gland is through a posterolumbar incision similar to that used in exposing the kidney. After the fascia of Gerota has been incised, the perirenal fat is reflected from the upper pole of the kidney and the kidney is retracted downward; this exposes the inferior and posterior aspects of the adrenal gland. It is possible in this manner to study the gland accurately from every side without disturbing the circulation. Care is taken to prevent injury to the blood vessels which enter the adrenal gland on its mesial and posterior aspect. Although we have seen one case of small multiple adenomas, minute in size, in other cases adenomas have been recognized grossly with ease; these have varied from 2 to 15 cm. in diameter. When larger tumors are present, practically the entire adrenal gland may be thinned out and destroyed, with the exception of a fringe a few millimeters in length, which can be recognized by its brilliant yellow as being adrenal cortical tissue. It must be remembered that on the right side the adrenal gland will be found to be in direct contact with the inferior vena cava. Usually the blood vessels supplying an adrenal tumor are much larger than the blood vessels which supply the normal adrenal gland. On this account, care must be taken to ligate them accurately.

20. Belt, A. E., and Powell, T. O.: Clinical Manifestations of the Chromaffin Cell Tumors Arising from the Suprarenal Medulla: Suprarenal Sympathetic Syndrome, Surg., Gynec. & Obst. **59**: 9-24 (July) 1934. Hick, F. K.: A Suprarenalin-Producing Pheochromocytoma of the Suprarenal Gland: Report of a Case, Arch. Path. **15**: 665-674 (May) 1933. Paul, Fritz: Die krankhafte Funktion der Nebenniere und ihr gestaltlicher Ausdruck, Virchows Arch. f. path. Anat. **282**: 256-401 (Oct. 17) 1931.

### SUMMARY

Symptoms produced by a tumor of the adrenal cortex depend on the sex and age of the patient at the time the tumor begins to function. These tumors are encountered most frequently among women and are characterized by variable changes in secondary sexual characteristics, such as cessation of menstruation, occasionally hypertrophy of the clitoris, abnormal growth of hair with masculine distribution and characteristic lesions of the skin such as a florid complexion accompanied by acne and purplish striations. Among girls, tumors of the adrenal cortex tend to produce precocious puberty which is more masculine than feminine in character. The disease seldom occurs among males, either young or old. It is characterized by precocious puberty of the masculine type in boys and by feminism in the male adult. The difficulty in making a diagnosis arises from the fact that the clinical picture is not pathognomonic. Similar clinical pictures result from any one of a number of diversified pathologic processes, such as hyperplasia of the adrenal cortices with or without thymic tumors, tumors of the gonads, and various intracranial lesions not directly involving the pituitary body. Routine laboratory studies have been of little aid in differential diagnosis although the presence of a high content of estrogenic substance in the urine is suggestive of the presence of adrenal cortical carcinoma provided pregnancy is excluded. Injection of air about the adrenal gland has been of aid in localizing some of the adrenal tumors. In forty reported cases in which operation was performed, the mortality was approximately 50 per cent. It is our opinion that the absence of mortality in seven consecutive cases in which operation was performed at the clinic is attributable to an increased understanding of the disturbance of physiologic processes which follows removal of almost all hyperfunctioning tumors of the endocrine system and to an increased knowledge of the pathologic physiology of Addison's disease. Improved methods of treating acute adrenal insufficiency have thereby been developed. These consist primarily of administration of large quantities of sodium chloride and sodium citrate, daily administration of an adequate amount of adrenal cortex extract and the use of a low potassium diet, throughout the entire postoperative period.

The most important medullary tumor is benign in character and is characterized clinically by attacks of paroxysmal hypertension. Reference has been made to four cases of adrenal medullary tumors seen at the clinic; in three of the cases operation was performed and the results were excellent.

In our experience, the most accurate surgical approach to the adrenal glands has been through retroperitoneal and posterolumbar incisions.

## ABSTRACT OF DISCUSSION

DR. HOWARD C. NAFFZIGER, San Francisco: The authors have set forth clearly the clinical aspect of tumors of the adrenal cortex and of the medulla. The good results from surgical treatment are a great credit to the surgeon. I believe, however, that no small measure of the success is due to the preparation for operation and to the postoperative management. This should be stressed particularly. Without meticulous attention to the measures that have been recommended, surgical intervention will be associated with far greater risk. A diffi-

culty in diagnosis has been mentioned, namely differentiation of the symptoms of adrenal cortical tumors from those of Cushing's disease. There is an implication that a basophilic adenoma of the pituitary is responsible for the symptoms of Cushing's disease. Numerous anatomic, pathologic and biochemical investigations, however, have brought forth facts that stand in the way of complete acceptance of this view. One must not ignore the fact that in so-called basophilism of the pituitary gland there is either hyperplasia or an adenoma of the adrenal cortex. I have been inclined to the view that there may be two distinct clinical pictures associated with hyperfunction of the adrenal cortex, whether it is caused by hyperplasia or by tumor. First, there is the adrenogenital syndrome, in which there is reversal of sex. This is the picture which the authors have associated with adrenal cortical tumors. Second, there is Cushing's syndrome, in which I feel that the symptoms also arise from altered cortical function. In Cushing's disease there is evidence of overproduction of cortical hormone. Moreover, there are disturbances in electrolyte metabolism which differ from those found in Addison's disease. In cases of so-called basophilism, it is my feeling that the possibility of primary adrenal involvement must be kept continuously in mind, for most of the symptoms of the disorder are caused by such involvement. This is true regardless of the focal point in which the disease had its origin, and concerning which there is still plenty of opportunity for debate.

DR. HANS LISSER, San Francisco: A group at the University of California Medical School have for many years been intensely interested in these bizarre sexual endocrinopathies. There are a vastly greater number of patients who exhibit only some of the characteristic manifestations of the adrenocortical syndrome, mostly abnormal hirsutism, with perhaps lengthened intervals between periods but without actual amenorrhea, enlarged clitoris or hypertension. We have hesitated to advise adrenal exploration in the absence of a demonstrable lesion. Unfortunately no medical or endocrine therapy is of any avail in producing loss of the abnormal hair which is so embarrassing to many of these young women. Following Cahill's paper on "The Visualization of Adrenals by Injection of Air through the Perirenal Fascia, via Petit's Triangle," we undertook this diagnostic procedure, about two years ago. The tumor cases mentioned antedated the use of air. We have injected air in fifty cases during the last two years, obtaining wonderfully clear delineation of the upper poles of each kidney, but in only one instance have we been fortunate in demonstrating a definitely enlarged adrenal. Rarely is the tumor large enough to palpate, being tucked up deep under the diaphragm. We hoped that this maneuver would enable us to pick up tumors not large enough to feel or large enough to distort the pyelogram. We have had no unhappy complications from this procedure although occasionally patients have experienced a sense of pressure high up under the sternum immediately after the introduction of air, have become rather faint and cyanotic and have coughed for about fifteen minutes; we assumed that this came from either irritation of the diaphragm or the accidental introduction of air into the pleural cavity. I am inclined to question one statement made, that "very rarely, granulosa cell tumors result in the male type of hirsutism, amenorrhea and hypertrophy of the clitoris." Possibly a reference to this in the literature has escaped my attention; it is a most unlikely occurrence, however, since granulosa cell tumors elaborate large quantities of female sex hormone and therefore produce true sexual precocity in the little girl, menorrhagia in the adult woman and late menstruation in women of 60 to 70 years of age. It is not a masculinizing tumor. Unfortunately there is no "measuring stick" of adrenal function, such as exists for the kidney. Therefore in the presence of an adrenal tumor one is unable to estimate the functional integrity of the other adrenal. Consequently there is a decided element of risk in removing one adrenal and, as the authors have emphasized, death has followed if the remaining adrenal was inadequate. Most important therefore is the preoperative preparation and the postoperative watchfulness, described by Walters and Kepler, in avoiding and combating postoperative adrenal insufficiency during the week after operation.

DR. WALTMAN WALTERS, Rochester, Minn.: The point stressed by Dr. Lisser is well worth recording. Dr. Lisser has referred to danger of injection of air in the renal and adrenal regions. I am told that at the last meeting of the American Association of Genito-Urinary Surgeons two deaths were reported following injections of air. I used the method in three cases and was frightened in each one by the occurrence of spasm of the diaphragm, asthenia, cyanosis and air hunger and I have discontinued it. I think it is safer and of greater practical value in these cases to explore the suprarenal glands themselves. I agree also that in several of our cases the adrenal tumor was of insufficient size to be demonstrable by injection of air.

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# A CONSIDERATION OF PRESENT DAY NEWBORN NURSERY PRACTICE

## SUGGESTIONS FOR IMPROVEMENT

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Fatal diarrhea of the newborn occurring as a local hospital epidemic has within recent years been reported with increasing frequency.[1] In the face of such reports, it is conceivable that present day newborn nursery practices may not protect the infant from the introduction and spread of contagion. The increasing number of reports of such outbreaks justifies this appraisal of the nursery.

The term "newborn nursery" is used to identify that portion of the obstetric floor set aside for the care and common housing of the newborn. This consideration is not directed to any institution in particular but rather at nursery practice in general. This is an evaluation of the average newborn nursery in the average hospital.

The introduction of contagion may occur easily, sometimes obviously and at other times more subtly. The normal flow of traffic frequently is a potent source of danger. There is scarcely any group of patients in the hospital more thoroughly exposed than the infants in the nursery. Because of the concentration in one area, all infants are exposed to each nurse whether assigned to him or not; to each obstetrician, his own and his neighbors'; to each pediatrician, his own and the rest; to each orderly; to each laundry man; to each charwoman; to each janitor, and to every person who enters the nursery. The recently delivered infant covered with vaginal secretion and occasionally with maternal stool is another significant source of trouble.

The formula and other liquids given to the babies are not always above suspicion. Rigid care is not always exercised in their preparation or storage.

The question of infections of the upper part of the respiratory tract of mild degree among persons having business in the nursery is another problem. Its evaluation is difficult. Few institutions require that nurses and interns with "colds" or "sore throats" be put to bed or at least stay out of the nursery until well. Unfortunately, the physician is a chief offender. It is not unusual to see physicians with colds in the nursery, handling these infants, relying on masks to protect the infant and confine the infection to the carrier. If the

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Read before the Section on Pediatrics at the Eighty-Ninth Annual Session of the American Medical Association, San Francisco, June 17, 1938.

1. Rice, J. L.; Best, W. H.; Frant, Samuel, and Abramson, Harold: Epidemic Diarrhea of Newborn; Preliminary Considerations on Outbreaks of Highly Fatal Diarrhea of Undetermined Etiology Among Newborn Babies in Hospital Nurseries, J. A. M. A. **109**: 475-481 (Aug. 14) 1937.

infection is due to a virus, it is difficult to see how several layers of gauze will stop the virus when a Berkefeld filter cannot. If the infection is bacterial, the known inefficiency of most types of masks after short periods of time [2] makes them ineffective. Fingering of masks and "on again-off again" tactics of the wearer complete the case against the mask as far as infections of the respiratory tract are concerned.

Little attention has been paid to the mother as a potent source of infection. In gonorrhea, how more intimately than from vagina to vulva, which occurs in the process of birth, can a newborn infant be exposed? Yet no special treatment is used to prevent the disease. How more easily can maternal bowel contents come in contact with the infant's mouth and subsequently its gastrointestinal tract than at the time of birth? How more intimately can an infant be exposed to a purulent infection of the skin than its own mother's acne, yet no special care is taken to protect it?

The enumeration of the sources of contagion is limited only by the imagination. The laundry, the innocent carrier, the insignificant skin lesion, the missed or subclinical gonorrhea, the unobserved, improperly functioning sterilizing equipment, the warm refrigerator, the plumbing cross of tap water and sewage may each have a varying degree of importance. From all these the individual infant must be protected. Yet few institutions are so set up that each and every avenue of approach is guarded and a routine check is made repeatedly.

The introduction of contagion into the nursery from without, while important, is relatively insignificant when the problem of transfer from patient to patient is considered. This transfer may occur with the greatest ease. Probably the most important single factor is the concentration of infants into one large unit called the nursery. This concentration is frequently nothing less than crowding. In a majority of nurseries the bassinets are arranged in convenient rows, touching each other at their sides or at best separated by a scant foot. In these instances the infants are separated from one another by the framework of the bassinet or a screening pad or cloth. This crowding, regardless of any of the intricacies of technic, is ideal for the spread of infection. It is impossible under these conditions to take or replace an infant without contaminating the neighboring bassinets. The changing of diapers, the disposal of regurgitated feeding, the changing of linen, the rearranging of positions all become impossible without the contamination of adjacent cribs.

In nearly all instances, the breaks in technic result in no harm. The errors are innocuous until a potent pathogen is introduced. The crowding then becomes a factor of spread rather than a factor of blockade.

The dressing table or work place is unimpeachable in theory alone. Few institutions require a complete change of sheets or other covering where an infant has lain. At most a clean diaper, easily wet through, is spread under the infant. Its shirt and other clothing are laid aside close by, contaminating other clean areas.

The neat tray of oils, cotton, powder and ointments may contain agents in the transfer of infection, not by the obvious contamination of their contents but by the more subtle contamination of their covers and outer surfaces. Few institutions require that these materials be handled with freshly washed hands, tissue paper or forceps. Time frequently does not permit of such finesse.

The physician's and attendant's clothing must also be considered in the introduction and transfer of contagion. Providing gowns for nurses and physicians does not solve this particular problem unless an individual gown is used for each infant. Common gowns hanging in dressing rooms next to the physician's coat enhance rather than block the spread of infection.

Washing of hands before each procedure, no matter how simple, is only infrequently required. It is no uncommon sight to see an attendant change an entire group of babies while keeping the bottles propped on one another without any thought of using soap and water. The nurse, since she must handle the infants frequently, is a greater menace than the physician, especially in the understaffed nursery. Where adequate nursing service is provided, this factor is proportionately reduced. Yet at this point it is fair to question how a simple rinsing with soap and water, and rarely is it more than that, can possibly be adequate when surgical procedures require much greater thoroughness. On the other hand, no skin could possibly stand up under surgical scrubbing in a newborn nursery.

At this point the question of fairness or accuracy of this criticism of technic as now constituted may be considered. If the foregoing is granted, the relative infrequency of epidemic or even absence of epidemic in many nurseries might be looked on as an argument against this criticism. The absence of such a catastrophe in individual nurseries should be considered as due entirely to good fortune rather than to active vigilance. Once infection has gained entrance, only those who have been active in stamping it out can truly evaluate and appreciate the situation.

A certain few institutions have worked out elaborate technics, meticulous to a fine degree.[3] This is especially true of nonobstetric nurseries. Every possible safeguard, check and block has been carefully considered and, in addition, machinery has been set up for its daily maintenance at a high standard of efficiency, with air-borne infection alone remaining uncontrolled. The recent development of ultraviolet ray traps may see even this eliminated.[4] But these conditions exist in special instances. It is extremely doubtful, and experience in previous years supports the doubt, that such fine technics cannot exist without innumerable breaks. Investigation impartially conducted sometimes reveals that the technic has broken down completely during long periods with apparently no serious consequences.

Running through this entire consideration of present day methods of nursery technic and management appears one constant factor; that is, the nursery itself. The nursery as it is now known, with its crowding, its traffic, its communal equipment, its constant flow of easily infected and susceptible patients, is the thing at fault. It is the nursery that is wrong and not the technic. The control of contagion in such a group should be automatic and entirely free of the conscious effort of good technic and practice. The technics are adequate but the conscious effort to main-

2. Blatt, M. L., and Dale, M. L.: Bacteriological Study of Efficiency of Face Masks, Surg., Gynec. & Obst. **57**: 363-368 (Sept.) 1933.

3. Sauer, Louis: Enteritis: Its Control and Prevention by Dick Diet Kitchen and Nursery Technic, Am. J. Dis. Child. **50**: 1159-1163 (Nov.) 1935.

4. Major, C. B., and Wilder, T. S.: Ultraviolet Light for Air Sterilization in Ward for Infants: Discussion of Preliminary Work, Hospitals **11**: 87-90 (Nov.) 1937. Hart, Deryl: Control of Air-Borne Pathogenic Organisms with Particular Reference to Use of Special Bacterial Radiant Energy: Preliminary Report, Arch. Surg. **34**: 874-896 (May) 1937.

tain them is the factor which breaks down. The care of infants should be so constituted that any accidental contaminant is blocked from further spread in the same manner that a fireproof building makes the spread of fire difficult. A fireproof building may burn but it does so with difficulty; likewise contagion might spread, but only with great difficulty.

The barrier that naturally suggests itself is the barrier of dispersion. The greater the dispersion of patients the more difficult becomes the spread of infection. The greater the dispersion of patients, the less the possibility of infection from direct or indirect sources. The wider the distribution, the less the possibility of contamination from obvious or obscure sources. At this point it must be emphasized that dispersion does not and cannot replace technic. It can only complement. It cannot replace.

The simplest form of dispersion, but at that the least effective of the methods of control, is that of treating each infant as a unit with complete equipment for that unit. This implies cubicle treatment, individual gowns, linen, locker, bedside stand, clothing, utensils and all the other necessities, all within easy reach of a wash stand, a method of treatment used in children and infant wards. The technic used would be that of the contagious unit. While this would be a step ahead, the dangers of "carriers" and the almost certain absence or ignoring of technic by a definite though usually small group of interns and very busy physicians would quickly make a mock of the technic unless it were guarded by a tyrant. Unfortunately this tyrant would be there only part of the time.

A dispersion of greater degree occurs if this cubicle system is used in conjunction with multiple nurseries of two to four baby capacity. In this scheme complete equipment for these infants in cubicles would form a unit close to or an integral part of a block of a similar number of maternal beds. This, of course, would mean wholesale alterations of existing obstetric floors but should be easy to incorporate in new structures.

Infection occurring in such a unit would be more readily confined and controlled than if it occurred in a nursery of twenty or thirty infants. A corollary to this method would be to house each baby in the mother's room. The objection to this method may have the weight of present day practice, but this is surely the more natural and to a certain extent more humane. Twenty minute visits every three or four hours is scarcely natural, nor will that be true after the mother and baby go home.

These methods of dispersion still have the objection of exposing the infant to a certain definite though diminished hospital traffic and to common services and supplies. They also imply redesigning and planning of obstetric floors. Further dispersion is possible and extremely desirable. The proposals to be cited may appear to be steps backward but should be considered as advances from positions now made untenable by experience.

The first proposal would be that of limiting the hospital stay to a much shorter period, ideally forty-eight hours or less after delivery. This would maintain for the physician the convenience of the hospital delivery but would limit contact to a shorter time.

The second proposal, the ultimate of dispersion, is frank old fashioned home delivery brought up to date. What is to prevent some far-seeing, pioneering obstetrician from equipping a mobile obstetric unit so complete and so cunning that all the advantages of the hospital could be had at home with none of the dangers inherent in the crowded nursery?

## SUMMARY AND CONCLUSION

The spread of fatal diarrhea of the newborn raises the serious question of whether present day practices are entirely beyond reproach. Critical appraisal of housing, communal equipment, nursery traffic and technic show them in many instances to be faulty to a dangerous degree. Correction of these faults as they occur in the present setup is extremely difficult, especially if this correction follows lines of increased regulation or tightening of technic. Dispersion of the nursery in all probability is the simplest solution of this problem. Considered as increasing degrees of dispersion and safety are (1) cubicle units each completely equipped; (2) nurseries of no more than three or four beds to be closely associated with a similar number of maternal beds; (3) newborn infants housed in rooms adjacent to or in the mother's room; (4) hospital delivery and discharge within forty-eight hours, and (5) the ultimate of dispersion, frank home delivery.

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## ABSTRACT OF DISCUSSION

DR. ERNEST WOLFF, San Francisco: The problem which Dr. Spivek has discussed still gives a headache to pediatricians and obstetricians alike. Not only do epidemiologists criticize the hospital nursery but psychiatrists today are objecting to the psychologic hazards of separating mother from child in an artificial hospital situation. Nevertheless, in a modern city the hazards and awkwardness of home delivery in most instances far outweigh any danger from a well conducted nursery. I think that, with a well thought out routine, epidemics of the newborn are preventable. Of the suggestions which Dr. Spivek makes, there are objections to several. If nurseries of three or four beds are closely associated with maternal beds, and if the same nursing force takes care of mothers and children, there is a possibility of carrying infection from lochia to baby. Concerning individual units, one hospital in San Francisco is actually set up to house each child in the same room or a room adjacent to the mother. This requires a special nurse for each, mother and child, and increases the expense. If the conclusion is reached that the hospital nursery is, after all, the most practical solution, one must emphasize the essential factors in good routine, which, as Dr. Spivek points out, must be based on completely equipped and separately run baby cubicles. I want to say something about the experiences we had in Mount Zion Hospital, San Francisco, covering a period of six years. The details have been demonstrated in the exhibit. The most important aspect of the routine has been the development of a truly cooperative spirit, in addition to a rigid technic, a spirit which unites house staff, nurses and physicians and which is carried out in such a friendly way that parents and relatives gladly share in the protection of their own baby as well as all others. Isolated cases of impetigo may occur under the best routine, but I think that an increased number of infected babies is always due to break in routine, and it is easily detectable. Critical evaluation of practices which have become conventional, such as Dr. Spivek has made in his paper, are very important. Only by such appraisal can practice be kept up with new experience.

DR. L. HOWARD SMITH, Portland, Ore.: As I understand Dr. Spivek's paper, he is not primarily interested in the prevention of the cutaneous infections of the newborn but epidemic diarrhea of the newborn. To see one of these infants literally wither before one's eyes is terrifying. Dr. Spivek is presenting a method to stop the spread of fatal diarrhea of the newborn. Until more concerning its etiology is known, there will be difficulty in stopping its entrance into the nursery. Once it has arrived, good nursing technic has not stopped its spread to other babies. Dr. Spivek speaks of the normal flow of traffic

in the nursery for newborn infants. This traffic has been lessened by the method of not bathing and nonoiling the newborn. The time spent each day by the nurse hovering over the baby is greatly lessened. In the average charity hospital or county hospital, where the infant population varies from eighteen to fifty a day, suggestions 1, 2 and 3 are hardly practical, but hospital delivery and discharge within two to three days would seem highly desirable. This practice has been carried out in certain hospitals with excellent results. Of course, the ultimate of dispersion is home delivery, but I cannot picture an obstetrician with a trailer hitched to his car carrying delivery equipment going out to deliver a baby in the home. Dr. Spivek deserves a medal from the Section on Pediatrics for suggesting such a practical method.

DR. MAURICE L. BLATT, Chicago, Ill.: Dr. Spivek's subject is most timely in view of the fact that epidemics of sepsis have invaded the nurseries for the newborn of institutions from New York to the Pacific. San Francisco apparently has been fortunate in not having had a serious epidemic in any of its nurseries. The problem as presented by Dr. Spivek is a result of our type of civilization. The assembling of large groups of people in a single hospital endangers each by intimate contact with carriers or individuals with disease. To disassemble such a civilization is difficult and it is this which Dr. Spivek suggests. I do not believe that advance can be made along the lines so suggested. I believe it is up to us as scientists, as pediatricians, as research workers, to determine a more effective method of prevention of sepsis in the newborn in nurseries in large communities. Nurseries will continue to be large because in no other way can we finance the care of the large number of indigent and semi-indigent patients thrust upon us.

DR. M. K. WYLDER, Albuquerque, N. M.: I come from a state where 40 per cent of the population live long distances from a doctor, where about 30 per cent of our women are delivered not even by a physician, and over 50 per cent of the women in our state are delivered in the homes. I see a great many of these babies that are delivered by a dirty Mexican midwife who washes her hands after the delivery instead of before it. However, in cases in which delivery is done on a sheep pelt laid under the woman in the bed, impetigo and septic infections do not result. While I don't think any of us want to go back to home delivery, impetigo and septic infections in the newborn in the home delivery aren't seen by us. This, then, is purely a problem for the hospital. As Dr. Arthur Abt told the round table at Delmonte the other day, if the hospitals don't solve these problems, the deliveries will go back to the home again. I believe the hospitals will solve them.

DR. IRVING J. WOLMAN, Philadelphia: I think all pediatricians who are familiar with the problems of the nursery would agree with Dr. Spivek whole-heartedly. One big problem, of course, lies in the etiology of these gastrointestinal infections which are now making their appearance all over the country. We younger men wonder whether these epidemics are new things or whether they have been going on for years without being reported in the literature. Most hospital routines are based on the assumption that the infective agents spread by direct contact and fomites. A most important but hitherto neglected approach lies in the prevention of air borne infections by the newer methods of air hygiene. It is questionable whether restricting the number of infants in any one nursery to two or four is sufficient. It would be better to isolate each individually. There are some new developments in the form of air conditioned cubicles within which infants are completely protected and isolated from the outside world. Dr. Chapple of Philadelphia presented a description of one such chamber before the American Pediatric Society last month. His rigid isolation technic includes the breathing of air from outdoors where the bacterial count is very low. The addition of atmospheric sterilization to the nursery armamentarium may prove of service in the control of nursery epidemics.

DR. MANDEL S. SPIVEK, Chicago: This paper is a theoretical one, a paper which was gotten up at a desk. It has nothing to do with research or with a reading of literature. It is my own appraisal of what goes on in the nursery. Dr. Wolff has a wonderful setup at the hospital with which he is associated, in which one of the most important things is the esprit de corps. That is, every one is aware of the technic, every one is conscious of it. There are very few hospitals that have that mutual understanding. Under those conditions, the spread of infection is difficult. Whether we can go back to home delivery or not, I do not know. It took a lot of educating and a lot of pushing to get the mothers from the home into the hospital. It will take the same education and the same push to get them back to their homes for delivery. It is merely a matter of education. It should not be difficult; I don't see any reason why we can't. Dr. Wolman spoke of air borne infection. We really do not know whether it is air borne or not or whether it is a virus disease or not. Various organisms have been reported, and in a thorough search for the virus in the Chicago epidemic nothing was found.

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# SODIUM DIPHENYL HYDANTOINATE IN THE TREATMENT OF CONVULSIVE DISORDERS

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AND
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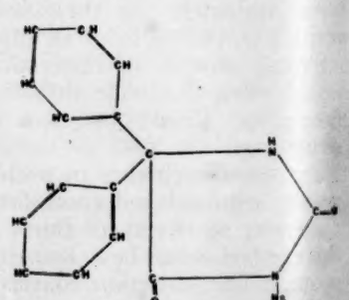
Good results in the treatment of patients with convulsive seizures have been obtained by a variety of methods, such as medical treatment with bromides or barbituric acid compounds, the ketogenic diet, restriction of fluids, and the surgical excision of scars or irritable cortical foci. In spite of these various therapeutic means there are a great number of patients who are not relieved of their attacks or are helped only temporarily by treatment. The fact that treatment by anticonvulsant drugs is at present the most widely used and on the whole the most effective method of therapy suggested to us the possibility that a direct and systematic experimental search might reveal more potent and less sedative compounds. With this idea in mind we devised an experimental procedure[1] which would produce convulsive seizures in animals at a constant threshold and which would allow for a qualitative and roughly quantitative determination of the relative effectiveness of various drugs. By this method a large number of chemicals and drugs, selected on theoretic grounds, were studied, and it was found[2] that several heretofore unused chemicals were as effective in protecting animals from the electrically induced convulsions as the drugs commonly used in the treatment of patients with convulsions (bromides, phenobarbital and the like) or even more effective.



Chemical structure of sodium diphenyl hydantoinate.

Under the auspices of the Harvard Epilepsy Commission.
This study was aided by a grant from Parke, Davis & Co., Detroit.
From the Neurological Unit, Boston City Hospital, and the Department of Neurology, Harvard Medical School.
Read before the Section on Nervous and Mental Diseases at the Eighty-Ninth Annual Session of the American Medical Association, San Francisco, June 17, 1938.

1. Putnam, T. J., and Merritt, H. H.: Experimental Determination of the Anticonvulsant Properties of Some Phenyl Derivatives, Science **85**: 525-526 (May 28) 1937.

2. Merritt, H. H.; Putnam, T. J., and Schwab, D. H.: A New Series of Anticonvulsant Drugs Tested by Experiments on Animals, Arch. Neurol. & Psychiat. **39**: 1003 (May) 1938.

One of these chemicals, sodium diphenyl hydantoinate, which was especially effective in protecting animals from electrically induced convulsive seizures with little sedative effect, was subjected to extensive pharmacologic and toxicologic tests by Krayer and by Kamm and Gruzhit.[3] The results of these tests showed that it was well tolerated by the ordinary laboratory animals (cats, dogs, rats) in massive single and long-continued daily doses. It was therefore considered safe to make a trial study of the drug in patients suffering from repeated convulsive seizures.

Sodium diphenyl hydantoinate is somewhat analogous in structure to the barbiturates, being a derivative of glycolyl urea rather than of malonyl urea. It is an odorless white powder with a bitter taste; it is soluble in water, slightly soluble in alcohol and insoluble in benzene and ether. The aqueous solution is alkaline to litmus and shows a $p_H$ of 11.7.

In order to determine the relative effectiveness of this drug on convulsive disorders in human beings, a group of patients was selected who had been having frequent convulsive seizures for many years and who had obtained little or no benefit from the usually accepted treatment, i. e. bromides, phenobarbital, ketogenic diet, restricted fluid intake and the like. The vast majority of these patients would be classified as having severe epilepsy.

## CLINICAL RESULTS

At the time of the preparation of this report, the medicine has been administered to 200 patients for a period varying from three weeks to eleven months. The results reported in this study are those in 142 patients with frequent attacks who have received the treatment for a period greater than two months, varying from extremes of eleven and two months, with an average of 4.3 months.

*In Patients with "Grand Mal" Seizures.*—Of the 118 patients with frequent grand mal attacks, complete relief of attacks has been secured in sixty-eight (58 per cent) and a marked reduction in the number of attacks in an additional thirty-two (27 per cent). In eighteen (15 per cent) there was only a moderate degree of improvement or no improvement over the previous status with bromides or phenobarbital therapy.

The results are shown in table 1 and two illustrative case histories are given here:

CASE 1.—B. H., highschool boy aged 15, white, with a history of one grand mal attack in infancy, began at the age of 11 years to have mild grand mal attacks with loss of consciousness for from two to four minutes. These attacks occurred three or four times a week for the first year and neither their frequency nor their severity were reduced by treatment with bromides or phenobarbital. At the age of 12 there was a spontaneous remission for one year. The attacks recurred at the age of 13 at daily intervals and were not influenced by phenobarbital or methyl ethyl phenobarbital (mebaral). The physical and mental development was normal and the neurologic examination gave negative results; the blood, urine and cerebrospinal fluid were normal. Roentgenograms of the skull were negative. Electro-encephalography showed evidences of abnormal cortical activity, with frequent short bursts of abnormal waves of the grand mal and psychomotor types described by Gibbs and Lennox.[4]

Treatment was started Sept. 15, 1937, with 0.1 Gm. of sodium diphenyl hydantoinate three times a day. There was complete freedom from attacks until May 1, 1938, when attending a dance while visiting friends he forgot to take his medicine and had two grand mal attacks in bed the next day.

Examinations of the blood and urine on several occasions since the start of treatment have shown no abnormalities.

CASE 2.—A. W., a white man, aged 26, suffered from severe grand mal attacks of five years' duration, occurring almost daily with an increase in frequency to two or three attacks daily during the month before entry to the hospital, although the patient was receiving 6 grains (0.4 Gm.) of phenobarbital daily. Examination was negative except for bilateral middle ear deafness and mental deterioration (mental age 9). The blood, urine and spinal fluid were normal. Roentgenograms of the skull were negative. Electro-encephalography showed frequent bursts of abnormal cortical activity of the grand mal type.[4]

Treatment was started Dec. 2, 1937, with 0.1 Gm. of sodium diphenyl hydantoinate three times a day. The patient has been entirely free of attacks since starting treatment.

*In Patients with "Petit Mal" Seizures.*—In seventy-four patients with frequent petit mal attacks, complete relief was obtained in twenty-six (35 per cent) and a marked reduction in the number of attacks in thirty-six (49 per cent). In twelve (16 per cent) there was only slight or no improvement over the status under previous forms of therapy. It will be noted from a study of table 2 that the percentage of relief or great reduction in the petit mal attacks was highest in the patients in whom the petit mal attacks were associated with those of the grand mal type. Two illustrative histories are given here:

TABLE 1.—*Effect of Sodium Diphenyl Hydantoinate on Grand Mal Convulsive Seizures in 118 Patients with Frequent Attacks Who Have Been Treated for a Period Greater Than Two Months*

| Frequency of Attacks | Grand Mal Alone | Grand Mal Associated with | | Total | Per Cent |
|---|---|---|---|---|---|
| | | Petit Mal | Equivalents | | |
| Completely relieved | 29 | 35 | 4 | 68 | 58 |
| Greatly decreased | 14 | 17 | 1 | 32 | 27 |
| Moderately decreased | 6 | 0 | 0 | 6 | 5 |
| No change | 10 | 2 | 0 | 12 | 10 |
| Total | 59 | 54 | 5 | 118 | 100 |

CASE 3.—D. R., a graduate nurse, aged 22, began to have petit mal attacks two and one-half years before examination. These were characterized by blinking of the eyes and a momentary lapse of consciousness without falling. Attacks occurred from one to three times a day.

The physical and neurologic examinations were negative and the blood, urine and spinal fluid were normal. Roentgenograms of the skull were negative. Electro-encephalograms showed disturbance of the cortical activity typical of petit mal.[4]

Treatment was started Oct. 22, 1937, 0.1 Gm. of sodium diphenyl hydantoinate being administered three times a day, with complete relief of attacks. The patient has attempted to go without the medicine on several occasions since with return of attacks.

CASE 4.—H. D., a white youth, aged 19, had been suffering for the past ten years with nocturnal grand mal attacks occurring two or three times a month and petit mal attacks several times a day. Previous treatment with phenobarbital (3 grains [0.2 Gm.] daily) had not reduced the frequency or severity of the attacks. The physical and neurologic examinations were negative. Examination of the blood, urine and spinal fluid was negative.

Treatment with sodium diphenyl hydantoinate 0.2 Gm. at bedtime was started Dec. 10, 1937. Since this date there has been complete relief from the petit mal attacks, but grand mal attacks occurred on December 17 and 28. The dosage

3. Personal communications to the authors.
4. Gibbs, F. A.; Gibbs, E. L., and Lennox, W. G.: Cerebral Dysrhythmias of Epilepsy, Arch. Neurol. & Psychiat. 39: 298 (Feb.) 1938.

of sodium diphenyl hydantoinate was increased to 0.4 Gm. daily on December 29. Grand mal attacks occurred on January 30 and March 20. The dosage was then increased to 0.6 Gm. daily with freedom from all attacks since March 20.

*In "Psychomotor Equivalent" Attacks.*—Of the six patients with psychomotor equivalent attacks there has been complete relief in four (67 per cent) and a very marked reduction in the frequency of attacks in two (33 per cent). The results are shown in table 3 and two illustrative cases are given here.

CASE 5.—S. B. R., a white man, aged 54, an insurance salesman, gave a history of attacks of five years' duration, occurring two or three times a day, characterized by a turning of the head to one side, chewing movements of the jaw, mental cloudiness and performance of automatic actions, such as taking off shoes. The patient would not fall but would be unable to answer questions or talk coherently for from thirty to ninety seconds.

The physical and neurologic examinations were negative. The blood, urine and spinal fluid were normal and roentgenograms of the skull were negative. Electro-encephalography showed evidences of abnormal cortical activity typical of those found in patients with psychomotor equivalents.[4]

Previous treatment had consisted of 9 grains (0.6 Gm.) of phenobarbital and 30 grains (2 Gm.) of sodium bromide daily, plus calcium gluconate, with no effect on the severity or frequency of the attacks. The patient was started on treatment with sodium diphenyl hydantoinate Aug. 8, 1937, in doses of from 0.4 to 0.6 Gm. a day. The frequency of attacks has decreased from two or three attacks daily to an average of three attacks a month.

CASE 6.—S. H. R., a man aged 55, an unemployed salesman, had attacks which started at the age of 15 with a transient feeling of nausea and blinking of the eyes. These occurred at irregular intervals for seven years. At the age of 22 he had grand mal attacks at night for a period of eight years, after which the grand mal attacks ceased and the petit mal attacks passed over into psychic equivalents. In these attacks he would perform automatic movements and talk and answer questions, but he would not remember what had happened afterward. These attacks occurred from three to five times a week. An attack would last from one and one-half to three minutes, followed by a period of mental cloudiness for from five to ten minutes.

TABLE 2.—*Effect of Sodium Diphenyl Hydantoinate on Petit Mal Convulsive Seizures in Seventy-Four Patients with Frequent Attacks Who Have Been Treated for a Period Greater Than Two Months*

| Frequency of Attacks | Petit Mal Alone | Petit Mal Associated with Grand Mal | Total | Per Cent |
|---|---|---|---|---|
| Completely relieved | 6 | 20 | 26 | 35 |
| Greatly decreased | 7 | 29 | 36 | 49 |
| Moderately decreased | 1 | 2 | 3 | 4 |
| No change | 6 | 3 | 9 | 12 |
| Total | 20 | 54 | 74 | 100 |

General physical and neurologic examinations were negative. Electro-encephalography showed evidences of abnormal cortical activity. Previous treatment had been from 1½ to 3 grains (0.1 to 0.2 Gm.) of phenobarbital a day.

The patient was started on treatment March 18, 1938, with 0.4 Gm. of sodium diphenyl hydantoinate a day. There was complete relief from attacks until April 3, when the patient complained of extreme nervousness and shaking of the hands. The dose of medicine was decreased to 0.2 Gm. daily on April 3 with relief of the nervousness but with return of attacks. April 14 the dose was increased to 0.3 Gm. a day with complete relief of attacks since but with the occurrence of anorexia and a feeling of nausea without vomiting. This has been relieved by taking the medicine with his meals. Examinations of blood and urine since treatment was started have shown no abnormality.

### DOSAGE

The dose used for adults varied between 0.2 and 0.6 Gm. a day, depending on the therapeutic effect and toxic reactions. As a rule adult patients were started on a dose of 0.1 Gm. three times a day, increased up to a maximum of 0.2 Gm. three times a day if therapeutic effects were not obtained. Small children were started on 0.1 Gm. twice a day, increased up to 0.4 or 0.5 Gm. daily until the optimum therapeutic dosage

TABLE 3.—*Effect of Sodium Diphenyl Hydantoinate on Psychic Equivalent Seizures in Six Patients with Frequent Attacks Who Have Been Treated for a Period Greater Than Two Months*

| Frequency of Attacks | Psychic Equivalents Alone | Psychic Equivalents Associated with Grand Mal | Total | Per Cent |
|---|---|---|---|---|
| Completely relieved | 0 | 4 | 4 | 67 |
| Greatly decreased | 1 | 1 | 2 | 33 |
| Total | 1 | 5 | 6 | 100 |

was determined. For convenience the medicine was usually administered at meal time. It was found that gastric symptoms were avoided by the few patients in whom they occurred by taking the medicine along with or after the meal rather than before it. The dose in the seventy-two patients who were relieved of their attacks varied from 0.2 to 0.6 Gm. with an average of 3.6 Gm. Relief was obtained on a dose of 0.3 Gm. a day by forty-two patients. In contrast, the average dose for the forty-five patients in whom the attacks were greatly decreased in frequency was 4.3 Gm. and for the unimproved group the average dose was 4.6 Gm. Although 0.6 Gm. was considered to be the maximum therapeutic dose, the average dose in the group of cases in which treatment was not effective was only 0.46 Gm. This is explained by the fact that many of the patients in the latter group were not able to take larger doses owing to the appearance of minor toxic symptoms, such as tremors, ataxia, diplopia or dizziness.

### TOXIC REACTIONS

The toxic reactions can be divided into two groups:

1. Minor toxic symptoms such as dizziness, ataxia, tremors, blurring of vision, diplopia and slight nausea. This type of reaction occurred in approximately 15 per cent of the patients. They tended to occur between the third and the tenth day of treatment and could be relieved by reducing the dosage. If the reduced dosage was not effective in controlling the seizure, it could in most instances be increased after a few days without the return of symptoms. In a few cases the dose could not be maintained at the optimum level of effectiveness on account of the appearance of these symptoms whenever attempts were made to increase the daily dose to more than 0.4 Gm.

2. More serious toxic reactions in the nature of dermatitis and purpura. Dermatitis occurred in ten cases (5 per cent) but in only one instance was the dermatitis considered to be of a serious nature. This was in a man, aged 55, in whom an exfoliative dermatitis developed forty days after he started the treatment.

The medication was immediately discontinued and the dermatitis gradually cleared. A brief abstract of his record is given:

CASE 7.—C. E., a man, aged 55, unmarried, a postoffice employee, was seen in 1933 with a history of grand mal convulsive seizures two or three times a month for two years. Complete physical and neurologic examinations at that time, including roentgenograms of the skull and examination of the spinal fluid, were negative except for a moderate degree of hypertension; the blood pressure was 140 systolic, 106 diastolic. He was discharged to his local physician and treated with phenobarbital and bromides with a temporary decrease in the frequency of the attacks, but they gradually recurred with their former frequency. Sodium diphenyl hydantoinate in a dose of 0.1 Gm. three times a day was started March 7, 1938. The patient's blood pressure at this time was 205 systolic, 130 diastolic. A convulsion occurred March 21 and the dose was increased to 0.1 Gm. four times a day. April 15 a morbilliform rash appeared on the face, trunk and extremities and developed into a brawny red maculopapular rash. There was no fever and, with the exception of a mild degree of itching sensation in the skin, the patient had no symptoms. He was admitted to the hospital, where he remained for approximately three weeks. The rash gradually cleared up, white wash being used to relieve the itching. In the hospital, examinations of the blood and urine were negative. The kidney function test showed a phenolphthalein excretion of 55 per cent in two hours. With the withdrawal of sodium diphenyl hydantoinate there was immediate return of convulsive seizures. These were controlled with large doses (6 grains [0.4 Gm.] a day) of phenobarbital.

In the remaining nine cases the cutaneous reactions were of erythematous, scarlatiniform or morbilliform nature. This type of reaction usually occurred on the ninth to the tenth day of treatment and was frequently accompanied by fever. The rash disappeared in all patients regardless of whether the treatment was discontinued. In seven of the nine patients the treatment was interrupted by us as soon as a rash was reported. Two patients failed to report the rash and continued to take the medicine throughout the period of duration of the rash. Five of the seven patients in whom the use of the medicine was discontinued during the period of the rash were put back on the treatment after a few days, since the medication had been effective in relieving the attacks. Treatment was discontinued in the two patients who had not been relieved of the attacks. In another patient treatment has not been resumed, although it had been effective, since we desired to observe the patient in the hospital when further treatment was instituted.

Two examples of cutaneous reactions are given:

CASE 8.—G. G., a high school girl aged 13, began to have petit and grand mal attacks at the age of 2½ years. The petit mal attacks occurred several times a day and the grand mal attacks every three or four days. Previous treatment with the ketogenic diet, bromides and phenobarbital were ineffective. The physical and mental development was normal. Physical examination and examinations of the blood, urine and spinal fluid were negative. Roentgenograms of the skull were negative. Treatment with sodium diphenyl hydantoinate 0.1 Gm. three times a day was started Jan. 28, 1938. February 7 (ten days after treatment was started) a generalized scarlatiniform rash appeared accompanied by a fever of 102 F. The treatment was discontinued and the rash and fever disappeared in four days. Treatment was reinstituted four days after the disappearance of the rash in a dose of 0.2 Gm. daily. Grand mal attacks occurred on February 18 and 19. The dosage was increased to 0.3 Gm. daily with no attacks until March 10. On a dosage of 0.4 Gm. a day the patient has been free of attacks since March 10. The blood and urine on several occasions since treatment was started have been normal.

CASE 9.—M. P., a white boy aged 13 years, had had left jacksonian convulsive attacks since the age of 1 year. The third attack at the age of 3 was followed by a left hemiplegia, which has persisted. The frequency of the attacks gradually increased and for the past few years they occurred on the average of five or six times a day. An attack was characterized by convulsive movements of the left arm and leg, lasting from thirty seconds to five minutes without loss of consciousness. Previous treatment had consisted of large doses of phenobarbital, bromides and "donhide," a proprietary preparation containing bromides and extract of scutellaria, without any appreciable effect on the frequency or severity of the attacks. On examination there was a spastic left hemiparesis and a moderate degree of mental retardation.

Treatment with sodium diphenyl hydantoinate 0.1 Gm. three times a day was started Jan. 24, 1938. After five days of treatment there was no change in the frequency of attacks and the dose was increased to 0.5 Gm. daily with complete relief from the attacks. February 2, nine days after the institution of treatment, the patient complained of itching of the legs and hands, and a faint scarlatiniform rash developed over the face and extremities. Treatment was discontinued and there was a prompt return of the attacks. The rash and fever disappeared by February 7 and the sodium diphenyl hydantoinate was started again in doses of 0.1 Gm. daily. This was increased to 0.3 Gm. February 17, and since then attacks have been very mild and very infrequent, permitting the boy to attend school. Frequent examinations of the blood and urine since the treatment was started have shown nothing abnormal.

In one case purpuric lesions developed on the buttocks approximately two months after the treatment was started. The patient had been relieved of his attacks. Since there were no constitutional symptoms and a thorough study of the blood was negative, and since the lesions were beginning to clear before the patient reported them, treatment was not interrupted. A brief abstract of this case is given here:

CASE 10.—K. C., a white man, aged 35, a machinist, had had convulsive seizures three years before entry to the hospital. These occurred occasionally in the day time but were more frequent at night, occurring from seven to eight times each night. They were characterized by an aura of belching and choking sensation and the occurrence of slight convulsive movements of the arm and invariable incontinence of urine. The attacks would last for from thirty to ninety seconds. In addition, the patient had had five grand mal seizures. General physical and neurologic examinations were negative. Studies of the blood and urine were negative and roentgenograms of the skull were negative. Electro-encephalograms showed abnormal waves of the grand mal and psychomotor types.[4] The patient was started on treatment Dec. 7, 1937. For the first three weeks of treatment there was no decrease in the frequency of the attacks, but the urinary incontinence which had previously accompanied the attacks disappeared. After this there was a gradual decrease in the frequency of the attacks so that by the second month of treatment they occurred only two or three times a week and by the tenth week they had disappeared entirely. February 15, approximately eleven weeks after the treatment was started, the patient had some teeth extracted under procaine hydrochloride anesthesia. February 19, large ecchymotic lesions were noticed on the buttocks by the patient's wife. Since the attacks had ceased the patient had discontinued the medicine February 18, but when they began to recur on February 22 he resumed the use of the medicine. The presence of the lesions was not reported to us until March 7, as the patient had attached no significance to them. At that time they were large brownish areas on both buttocks. The hemoglobin content of his blood was 88 per cent, red blood cell count 4,800,000 and white blood cell count 14,200, with 78 per cent polymorphonuclears, 19 per cent small lymphocytes, 2 per cent large lymphocytes, 1 per cent eosinophils. The red blood cells and platelets appeared normal in smear and the platelet count was 322,000 per cubic millimeter. The bleeding time was one and one-half minutes and the tourniquet test was negative. The blood was reexamined care-

fully ten days later with no change in the red blood count or hemoglobin content. The white blood count was 10,000 with differential count as before; the platelet count was 337,000; bleeding time two minutes, icteric index 5. The patient has been continued on treatment since with no return of attacks. There have been no new lesions, and the lesions on the buttocks have gradually faded. Frequent examinations of the blood and urine have shown no abnormality.

## COMMENT

The results here reported indicate that sodium diphenyl hydantoinate was effective in controlling convulsive seizures in a great majority of a selected group of patients who were not helped by other methods of therapy. It is natural to assume, therefore, that even more satisfactory results could be obtained in patients with a less severe tendency to convulsions.

It must be noted that with a few exceptions the duration of treatment in the majority of the cases was less than six months. It is probable, therefore, that many of the patients in the "completely relieved" group will later be transferred to the other groups, but it is also possible that greater experience with the use of the drug will n ke it possible to obtain better results in some of the cases in the moderately or greatly improved groups. Whether or not some of the patients will ultimately become refractory to this treatment, as has occurred with other forms of therapy, remains to be seen.

In addition to a relief or a great reduction in the frequency of the attacks, it was frequently noted by the parents of children that they were much better behaved, more amenable to discipline and did better work in school. This improvement must have been due in great part to the freedom from attacks, but it is also possible that the medication produced other changes in the activity of the cerebral cortex. Studies of the cortical activity by means of the electro-encephalogram before and after treatment with sodium diphenyl hydantoinate are being conducted in collaboration with Dr. F. A. Gibbs and will be reported at a later date. The results of this study may conceivably lead to the use of the drug in conditions other than the convulsive state associated with similar cortical dysrhythmias.[4]

Sodium diphenyl hydantoinate has been shown to be a relatively nontoxic drug when given in doses of from 0.2 to 0.6 Gm. a day. There were no fatalities in a group of 200 patients and in only two patients was there a reaction that could be considered as serious in nature—an exfoliative dermatitis in one patient and a nonthrombocytopenic purpura in the second. Frequent studies of the blood and urine failed to reveal any evidence of damage to the hemopoietic system or kidneys in any of the 200 patients. The toxic dermatitis produced by the drug, with the one exception already noted, was of a benign nature and was quite similar to that produced by another hydantoin compound, phenylethyl hydantoin (nirvanol), which was formerly used in the treatment of chorea minor. Sodium diphenyl hydantoinate is without doubt, however, considerably more toxic than bromides and the barbituric acid compounds. Cutaneous reactions as well as the minor toxic symptoms of tremors, ataxia, diplopia, dizziness and the like are much more frequently encountered. The high degree of alkalinity of the drug sometimes causes a sensation of nausea and discomfort in the abdomen, making it difficult for some patients to take it regularly. It is possible also that a more extensive use of the drug will result in other toxic reactions which we have not as yet encountered in our 200 patients. In spite of these handicaps we feel that sodium diphenyl hydantoinate is a valuable addition to the medical armamentarium in the battle against epilepsy and that it is worth trying with proper precautions in patients who have not responded to the less toxic modes of therapy, such as the bromides, the barbituric acid compounds or the ketogenic diet.

The optimum dosage of the drug must be determined by trial. Children above the age of 6 and adults should be started on a dose of 0.1 Gm. three times a day. Gastric discomfort and nausea can usually be prevented by giving the capsule with or immediately following the meals. If seizures are not controlled by the end of from seven to ten days an additional dose should be given at bedtime. Further increase in the dose, up to a maximum of 0.6 Gm. a day, can be adjusted according to the tolerance of the patient. Infants and children up to the age of 5 years should be started on a dose of from 0.1 to 0.2 Gm. a day, which can be gradually increased to 0.3 to 0.4 Gm. a day if necessary.

The appearance of minor toxic symptoms, such as nervousness, tremors or ataxia, calls for a reduction in the size of the dose. If the reduced dose is ineffective, attempts can be made after from five to ten days to increase it. The use of the drug should be immediately discontinued if more serious toxic symptoms, dermatitis, purpura and the like develop. An exfoliative dermatitis makes further use of the drug absolutely contraindicated. A mild erythematous, morbilliform or scarlatiniform reaction occurring on the eighth to the eleventh day of treatment is not of such serious import, and, if there are definite indications that the drug has been effective in relieving severe attacks, it can be given again in small doses with caution. If no untoward symptoms develop, the dose can be increased gradually every four to six days. On the reappearance of any toxic manifestation, further use of the drug is prohibited.

If patients have been receiving large doses of bromides or phenobarbital, these should be continued along with the sodium diphenyl hydantoinate, the dose of the bromides or phenobarbital being gradually decreased over a period of from four to seven days. This is advisable since the sudden withdrawal of the bromides or phenobarbital may result in the precipitation of a series of attacks before a reservoir of sodium diphenyl hydantoinate has been built up.

Our experience with the drug has not been sufficient to determine all the contraindications for its use. At present we feel that it should not be given to elderly persons with hypertension or other evidences of cardiorenal disease, or to debilitated patients.

## SUMMARY

1. In a previous study it has been shown that sodium diphenyl hydantoinate is effective in preventing electrically induced convulsive seizures in cats. The drug is relatively nontoxic and well tolerated by the usual laboratory animals.

2. A clinical trial of sodium diphenyl hydantoinate was made in 200 patients with frequent convulsive seizures which had not been relieved by the previous modes of therapy.

3. In 142 such patients who have received the treatment for periods varying from two to eleven months, grand mal attacks were relieved in 58 per cent and greatly decreased in frequency in an additional 27 per

cent; petit mal attacks were relieved in 35 per cent and greatly decreased in frequency in an additional 49 per cent, and psychic equivalent attacks were relieved in 67 per cent and greatly decreased in frequency in 33 per cent.

4. There were no fatalities. A toxic dermatitis occurred in ten patients (5 per cent), nonthrombocytopenic purpura in one patient and minor (in many instances, transient) toxic reactions, tremors, ataxia, dizziness and the like in approximately 15 per cent.

### CONCLUSIONS

Sodium diphenyl hydantoinate is a valuable addition to the physician's armamentarium in the battle against "epilepsy." Its use should be restricted, for the present, to that group of patients who do not respond to the less toxic forms of therapy previously in common use.

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### ABSTRACT OF DISCUSSION

DR. EUGENE ZISKIND, Los Angeles: The discovery of this drug is an indication of the mental alertness of these authors, which has been shown in much of their previous experimental work. The discovery is based on attention to a clinical observation with which some physicians may not be acquainted. Drs. Merritt and Putnam observed that whereas phenobarbital controls seizures in a high proportion of cases that is not true of other barbiturates, and so, concentrating on the phenol fraction of the phenobarbital, their investigation led to the trial with these various drugs which showed so definite an effect on the convulsive seizures. In epilepsy, therapy of this type is essential for long periods, often many years. I would be interested in seeing what the incidence of complication is when this drug is used for longer periods. The statistical results so far reported are far in excess of what one would expect as a chance of variation. Dr. Somerfeld and I had occasion to observe that phenobarbital markedly increased the extrapyramidal rigidity in cases of parkinsonism, and we shall be stimulated by this study to investigate also whether or not the response there has been from barbiturates or by the phenol elements. We are also looking forward to an opportunity to use this drug, which appears to be a notable advance in the therapy of convulsive disorders.

DR. T. J. PUTNAM, Boston: The results of the use of this drug, as reported by the authors and by Dr. Shurly from Dr. Kimball's clinic, speak for themselves. I should like to emphasize in relation to this project, however, not alone the efficacy of this drug but the fact that, it seems, a new method of studying modes of therapy of convulsions has become available. There probably are several kinds of convulsions. Perhaps there should be several types of medication to control them. This is only one drug found through a preliminary experimental survey. There is reason to believe there are perhaps many others and maybe more effective ones still to be found.

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**The Health of Early English Queens.**—Henry VIII had studied pharmacy and often mixed medicines in his own laboratory as a pastime between his six love affairs; but his medical knowledge did not extend to obstetrics. His Queen Catherine in eight pregnancies had only one living child. Anne Boleyn had but one living child, the future queen Elizabeth, and two miscarriages. Jane Seymour died of fever soon after her son, Edward VI, was born. He died at the age of 16. Queen Mary, Catherine's daughter, was more concerned with her own health and the combating of heresy than the health of her people. Queen Elizabeth, who had been sickly from her eleventh year, had to submit to so many bleedings and purgings that it is a wonder that she lived to reign at all. Elizabeth was, perhaps, the most thoroughly educated woman of her age. She spoke several languages and wrote Latin and Greek easily. She had dabbled in medicine.—Hurd-Mead, Kate Campbell: A History of Women in Medicine, Haddam, Conn., the Haddam Press, 1938.

## RECENT RESEARCHES IN NUTRITION IN RELATION TO PREVENTIVE MEDICINE

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Hippocrates is reported to have stated that "there are many other ills different from those of repletion but no less dreadful arising from deficiency of diet." The history of medicine contains many references to observations which supported the theory that there is a relationship between diet and certain diseases such as beriberi, scurvy, night blindness, osteomalacia and rickets, known by various terms in different languages.

With the advent of bacteriology and its brilliant discoveries, however, the idea that disease can be brought about by lack of something in the diet was difficult to comprehend, especially in the light of the many diseases which were shown to be of bacterial origin. It was not until the fundamentals of an adequate diet were demonstrated by means of animal experiments that a relationship between faulty diet and the so-called deficiency diseases could be demonstrated. Pernicious anemia, diabetes and goiter will not be discussed in this paper.

With the possible exception of pellagra, clearcut clinically defined disease entities of dietary origin have not played a large part in mortality and morbidity statistics, so in the past the attention of public health officials and physicians interested in preventive medicine has not been focused on the role of nutrition in the public health program. However, it is now recognized by many physicians, nurses, nutritionists and others interested in the public welfare that malnutrition and borderline deficiency diseases are not uncommon in the low income groups and also among persons with sufficient incomes but with faulty food habits. Malnutrition has been spoken of as "the great disease of the American school child."

There is an interesting history of nutrition which laid the foundation for much of the recent work, but, fundamental as were the studies of the early investigators on the mineral, energy and protein needs of the body, it was not until about 1925 that there existed a practical working knowledge of the subject. The development of the newer knowledge of nutrition may be said to have begun about the end of 1915. From about 1912 on the vitamin hypothesis was in the air. It was inevitable that soon some of the various investigators working in the fields of biochemistry and nutrition would formulate on the basis of definite experimental evidence a working hypothesis concerning the essentials of an adequate diet. McCollum and Davis [1] did this in 1915. They stated that "in addition to the well recognized dietary factors, two as yet unidentified dietary essentials are necessary in the diet."

Many important papers published between 1915 and 1938 elaborated on this hypothesis. It is apparent to every one interested in medicine and related fields that more progress has been made in the science of nutrition since 1915 than in all time previous. Without question this has been due to the demonstration of the existence

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From the Medical Center, University of California.
Read before the Section on Preventive and Industrial Medicine and Public Health at the Eighty-Ninth Annual Session of the American Medical Association, San Francisco, June 16, 1938.

1. McCollum, E. V., and Davis, Marguerite: The Essential Factors in the Diet During Growth, J. Biol. Chem. **23**: 231 (Nov.) 1915.

of the vitamins. The excellent series of articles on these factors appearing in the current issues of THE JOURNAL present data far beyond the fondest dreams of the biochemists of twenty-five years ago.

But what is the practical application of this research to preventive medicine and to public health? Dr. James M. Gamble [2] of Harvard Medical School expressed one example of a practical application when he said:

> This splendid significance of the results of recent studies on rickets is not in the least subtracted from by admitting that the knowledge thus gained is not new knowledge. That cod liver oil would cure rickets has been known for several hundreds of years. This discovery is credited to fisher folk of northern Europe. That sunlight is preventive was convincingly evident to students of rickets generations ago. In recent times, however, the introduction into medicine of a commendably cautious reliance only on demonstrable data has produced perhaps a too inclusive disrespect for the older empirically established beliefs. A splendid clearance of rubbish has been accomplished, but, inevitably, grains of gold have been lost with the dross. To an even mildly critical attitude of mind the belief that oil from the liver of cod fish is specifically curative of a human ailment was obviously a quaint bit of archaic medical lore. The theory of a relationship of sunlight to prevention seemed an interesting but intangible surmise. The scientific method of thinking having produced skepticism, it was quite necessary that the rickets-preventive action of cod liver oil and of sunlight be rediscovered in irreproachably scientific terms. That this has been most beautifully done ensures a permanent and active belief in the efficacy of these agencies. And since their employment is so easily practicable we may now regard rickets as a preventable and unnecessary disease.

Another example in point: Over twenty years ago Dr. Joseph Goldberger [3] of the United States Public Health Service and Dr. Beverly R. Tucker [4] of Richmond, Va., were among the investigators who stressed the importance of an adequate diet in the treatment and prevention of pellagra. At that time, however, the vitamin content of the foods they recommended, such as meats, eggs, milk, legumes, fruits and vegetables, were not known as they are today; the language of nutrition was for the most part proteins, fats, carbohydrates, minerals, water and calories. The vitamin hypothesis was in its infancy not only in regard to the vitamin content of foods but also in relation to certain diseases. About 1913 Dr. Casimir Funk advanced the vitamin hypothesis to account for the occurrence of pellagra, beriberi, scurvy and rickets, but at that time neither the medical nor the nutritional aspects of these diseases were sufficiently advanced to make the vitamin hypothesis incontrovertible. However, as a result of research there is today at least a partial explanation of the "why" not only of the deficiency diseases but also of the part which faulty diet plays in their etiology, for there is a wealth of information on the dietary properties of foods. It is known why certain foods prevented scurvy in the past and will do so today; why pellagra did not and does not occur when milk, meats, eggs, fruits and vegetables are used in abundance; why cod liver oil and sunshine are rickets preventive. That persons may take an adequate diet and be unable to assimilate some of the factors is well known, of course, to physicians.

Furthermore, research in nutrition has made possible an analysis of racial and regional food habits. The soy bean curd of the Orient, the beans of Mexico, the poi of Hawaii, various foods of the Eskimo, including glandular organs, soft bones and blood, and the dairy products of other countries have much in common from the dietary standpoint. Human experience had demonstrated that no one food, with the exception of water, is or ever was indispensable in nutrition. Research has explained in part at least why. The following words of Dr. Woodruff [5] are pertinent: "In ultimate analysis everything is incomprehensible, and the whole object of science is simply to reduce the fundamental incomprehensibilities to the smallest possible number."

The prevention of malnutrition and deficiency diseases is not so simple as it would first appear. According to Burnet and Aykroyd,[6] "nutrition is an economic, agricultural, industrial and commercial problem as well as a problem in physiology." I should like to add that it is also an educational problem in which form, in the last analysis, it is probably the most difficult to handle. Beriberi still occurs in the Orient and elsewhere, pellagra is widespread, rickets is still present, a case of advanced scurvy and also of xerophthalmia occurs occasionally. Full-blown deficiency diseases are the spectacular phase of nutrition, but the prevention and also the early recognition of borderline states associated with malnutrition are of more importance from the standpoint of public health and preventive medicine. Cases of borderline deficiency are being reported with increasing frequency owing in part perhaps to better diagnosis. It is with the educational problem that the nutritionist and the public health nurse will have important roles. However, all persons adequately trained should assist with the educational program.

Owing in part to the fact that research not only has demonstrated the existence of vitamins but also has isolated and synthesized several of them, much of the world is extremely vitamin conscious at the present time. The various vitamins, dicalcium phosphate wafers and other calcium salts have been given a great deal of publicity, which has tended to focus too much attention on them. It should be emphasized that vitamin capsules, vitamin tablets and dicalcium phosphate wafers or other calcium salts are not panaceas for the solution of nutrition problems, valuable as they are or may be in supplementing certain diets. For example, the spectacular relief of the outstanding symptoms of pellagra by nicotinic acid or of scurvy by ascorbic acid does not solve the nutrition problems of patients with these diseases. Whenever possible, at least a brief nutrition history should be taken whether or not the patient shows symptoms of a deficiency disease, and if necessary the diet should be adjusted so that all dietary factors are abundantly supplied. Time, cost, convenience, likes and dislikes and habit are a few of the factors which must be taken into consideration when dietary suggestions are made. I [7] have outlined elsewhere the procedure for taking a nutrition history.

A review of the journals devoted to biochemistry, medicine and nutrition makes one question whether there is not too much of a tendency to discuss nutrition in terms of vitamins, essential amino acids, carotene,

2. Gamble, James M.: No Child Need Have Rickets, in Stieglitz, Julius: Chemistry in Medicine, New York, Chemical Foundation, Inc., 1928, pp. 163-164.
3. Goldberger, Joseph: The Cause and Prevention of Pellagra, Pub. Health Rep. **29**: 2821 (Sept. 11) 1914.
4. Tucker, B. R.: Pellagra, Internat. Clin. (series 26) **1**: 64, 1916.
5. Woodruff, L. L.: Foundations of Biology, New York, Macmillan Company, 1922.
6. Burnet, E., and Aykroyd, W. R.: Nutrition and Public Health, Quart. Bull. Health Organ., League of Nations **4**: 326 (June) 1935.
7. Simmonds, Nina: The Dietary History and Its Value in Dental and Medical Practice, Am. J. Digest. Dis. & Nutrition **4**: 497 (Oct.) 1937.

thiamin chloride, ascorbic acid, nicotinic acid, dicalcium phosphate, calcium gluconate, units of various vitamins in foods and units of various vitamins needed daily by the individuals. In the light of the paucity of information available twenty-five years ago, one wonders whether so far as the practical aspects of nutrition are concerned the pendulum has not swung a little too far in the direction of meticulous attention to vitamins.

Data secured from animal feeding tests and color tests and then subjected to mathematical treatment have undoubtedly a certain value in estimating the units of vitamins needed daily, but because of sources of error, which are all too numerous, should not such data be considered of relative significance instead of being discussed with such a tone of accuracy and finality? I think so.

If nutrition is going to be an important factor in the public welfare it must be viewed with perspective, as are other problems in public health. The details of vitamin research, mineral metabolism and so on are of great interest to the sciences of medicine and nutrition, but in preventive medicine and public health one must deal largely with natural foods and products made from them. Research has provided not only a wealth of information on the dietary properties of foods but also data on what changes take place during the refining, the canning, the preparation, the cooking and the storage of many foods. This information is needed when one is judging the adequacy of a food supply.

In closing, then, it may be said that the practical application of research in nutrition during the past twenty-five years has been not only to emphasize the value of sunshine and fresh air but also to give the reasons why in a system of diet the following familiar foods have unusual dietary significance: meats, including glandular organs, poultry and fish; eggs; milk in its many forms and products; fruits and vegetables (fresh, canned and frozen); legumes, and cereals and their products, especially whole grain products. Research has provided vitamin capsules, vitamin tablets, brewers' yeast tablets and numerous other vitamin preparations, many of which are excellent supplements to a diet when certain foods are disliked, but one should know what they do not contain as well as what they do contain.

Nutrition, as stated earlier, has been referred to as "an economic, agricultural, industrial and commercial problem, as well as a problem in physiology."[4] However, because of the results of recent researches on diet and its relation to disease conditions, from the standpoint of preventive medicine and of public health, nutrition may now be considered largely a problem of economics and education.

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## ABSTRACT OF DISCUSSION

DR. M. J. ROSENAU, Chapel Hill, N. C.: One of the pleasures of discussing a paper is to take issue with the reader of the paper regarding facts or views. That joy is denied me because Dr. Simmonds has presented such an admirable contribution that all I am able to do is to confirm what she has said. There are certain things which may stand emphasis. In the story of the growth of knowledge of nutrition, she did not mention her own long list of notable contributions. She brought out how recent is our scientific knowledge. As a matter of fact, nutrition, while the youngest science, is the oldest in the arts. We can go back to Leviticus, in the early days of the Mosaic Code, which emphasized nutrition and the importance of selecting diet and other things with reference to it. There were two things that brought nutrition to the fore, even before these scientific contributions, and one was tuberculosis. The two papers read today again mentioned that diet, sunshine, rest and other factors that deal fundamentally with nutrition have a bearing on the prevention and treatment of tuberculosis. That is where nutrition was taken out of playing the role of cinderella in the kitchen and taken to the ball, but she was not crowned until the vitamin discoveries. It pleased me to hear Dr. Simmonds sound a warning that on account of the novelty and brilliancy of the discoveries, progress has been so extraordinary that it has blinded us to other phases of nutrition and overemphasized the role the vitamins play. I was glad to hear her say that the place to buy vitamins is in the market, by patronizing good sunshine, and in the dairy rather than in the drug store. Taking too many vitamins that may be bought in all sorts of concentrates is about as foolish as oversalting our food. Too much of even a good thing like vitamins in certain instances is harmful. Despite what we know about nutrition, the practice lags behind the facts. Science has shown the way but it requires society to apply the facts; in other words, it becomes an economic problem, a problem in sociology; it becomes enormously complex. Another point that was clearly mentioned in the paper was that we should not place in our minds a period after any of these things about nutrition that we feel we know today. After all, the surface has only been scratched. There are many related phases of it, dealing with a norm which acts and reacts on the food we eat, depending on the air we breathe, the sunshine to which we are exposed and other things. Progress along these lines will continue, and out of this complexity will come simplicity and, in the end, a relief of one of the greatest of all burdens that mankind now suffers from; namely, malnutrition.

DR. W. A. SAWYER, Rochester, N. Y.: I am glad that Dr. Simmonds mentioned the educational feature of nutrition because for those of us having to do with employees in industry it is becoming an increasing problem; not only do we need to know what to eat but I find that workers now need to know when to eat. Commercial interests are pushing vending machines of all kinds, placing many of them in factories. Labor unions are demanding them and, as a result, we find that workers have a tendency to eat more or less continuously. Dr. Haggard, in "Diet and Physical Efficiency," states that eating five times a day is perhaps as satisfactory as eating three times a day. I should like to know whether Dr. Simmonds has any thoughts on that question.

DR. L. D. BRISTOL, New York: The place of nutrition education is well recognized, particularly in our public schools and in the field of public health, but it is only within the last few years that this subject has been recognized in industry. For the last nine years in several companies of the Bell system about 10,000 women employees have completed a twelve lesson nutrition course, a volunteer course taken out of hours, entirely on the employees' time, and we feel that such education is definitely allied to the prevention of absence because of sickness and to the increase of health and efficiency on the job. There are only a few industrial organizations at present that have nutrition specialists on their staffs. Dr. Sawyer's organization, the Eastman Kodak, is one, and our organization is another. Our classes are held in groups of about twelve, the practical work being carried on in company dining rooms and kitchens. At the end of this twelve lesson course the employee is given a certificate of graduation. I believe that more and more industrial organizations, particularly the larger companies, eventually will include nutrition education in their health education programs.

DR. NINA SIMMONDS, San Francisco: The time allotted did not permit me to discuss the practical aspects of handling an individual's nutrition problems. I have formulated a series of questions which I have called "The Nutrition History," which has proved to be of assistance in handling these problems. Any one interested may secure a copy by writing to me at the University of California, the Medical Center, San Francisco. Before discussing an individual's nutrition problems with him it is necessary to have the person keep a ten days to two weeks record of all foods eaten and the approximate amounts, including extra foods, such as candy, ice cream, milk shakes, cocktails and coca-colas. This record usually

gives a good idea of a person's present food habits and interests; it may or may not be representative of his former food habits. From this record and the answers to the questionnaire and, of course, discussing the problems with the individual, it is possible to work out a satisfactory dietary regimen. It is best to make the fewest possible changes in a person's food setup compatible with an adequate diet. Although all dietary factors may be secured from foods, because of dislikes, habits, convenience and so on, vitamin tablets and other preparations have proved valuable dietary supplements; but one should know what they do not contain as well as what they do contain. Diet and its relation to disease conditions cannot be discussed here, but The Nutrition History is also of value in handling these problems.

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## ALCOHOL IN RELATION TO TRAFFIC ACCIDENTS

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There has been much discussion for many years of the effects of alcohol on human beings. A major question now is the effects of alcohol on the automobile driver. All too often discussions involving alcohol have been colored by emotion and have suffered from lack of facts.

Recognizing the importance of drinking to safety, I hope to define objectively and unemotionally the part alcohol plays in the accident problem. Scientific methods have lately been perfected that make such a definition possible. Through their use, it is hoped that a step forward will be taken in the solution of a serious problem.

Alcohol has long been considered an important cause of accidents. Every one will concede that it impairs the judgment and physical abilities. With the coming of the motor car, the importance of alcohol as a causative factor in accidents became increasingly apparent. Driving a motor car calls for quick thinking, rapid and coordinated operation of the controls of the car and accurate judgment. With the increase in speed of motor cars, coupled with increased congestion on highways and streets, the problem of the drinking driver has become increasingly acute.

It is the major purpose of this study to define clearly the place of the drinking driver in the present day accident problem. How much more liable is the drinking driver to be involved in an accident than the sober driver? In what percentage of accidents is alcohol a factor? In other words, an answer is sought to the questions "Are you more liable to be in an accident if you drive after drinking than if you drive not having had anything to drink? How much more liable are you?"

Most important of all is the aim to show at what concentration alcohol in the human system becomes a factor in accidents. When one encounters a person who has been drinking there is little question in one's mind as to whether or not he is under the influence of alcohol. However, when it is necessary to prove in court that he was under that influence, the problem becomes involved. Police departments have long used simple rule of thumb technics, such as observing the suspect's breath, gait, speech and condition of clothes and putting him through such tests as touching the tip of his nose with his finger, enunciating "methodist episcopal" and writing a few short sentences from dictation to be compared later with his usual writing.

The National Safety Council's Committee on Tests for Intoxication has developed an intoxication report form [1] intended to make the most reliable use of such methods as a means of determining their dependability. This form has refined the technic of determining drunkenness from observation. It attempts to take into account and tries to get proof to rebut all the possible defenses that the person may offer, and it provides for the recording of all subjective evidence as to his condition.

The committee recognized that this method is subject to a variety of attacks by the defense because many times the condition reported could have been caused by injury or illness.[2] Defense attorneys make the most of this. In many cases they are able to create enough doubt as to the defendant's intoxication to secure an acquittal, especially in a jury trial. It is difficult even for a physician to take the stand and say positively from a subjective examination whether or not a person was under the influence of alcohol. It is still more difficult for the police officer to do so. While systematic, complete recording of physical symptoms of intoxication are of value, more objective tests are obviously necessary in many cases. To encourage the use of more accurate and scientific methods, the form also includes provision for chemical tests of body fluids.

Long before automobile accidents became the serious problem they now are, it was known that a relatively accurate measure of the amount of alcohol in a person's system could be made from the analysis of body fluids, as well as from the analysis of the organs themselves.

Further, an accurate correlation was found between the amounts of alcohol after absorption in the different body fluids and organs. If the amount of alcohol in one part was known, the amount in another could be accurately calculated. For convenience the amounts found in the various other fluids are related to the amount of alcohol in the blood. For example, the alcohol in the blood is 1.2 times that in the brain, 0.9 times that in the spinal fluid, 0.8 times that in the urine and 2,000 times that in the alveolar air.

When the need for such analysis was felt, certain of the body fluid tests were refined and developed. The most practical of the tests determined the alcoholic content of the spinal fluid, blood, urine, breath and saliva. There are serious objections to the first two. The spinal fluid test is dangerous because of the difficulty in drawing out a sample. Also it has the practical difficulty that it requires a physician to take the sample. The blood test has similar disadvantages to a lesser degree. Courts frown on any technic that might endanger the person examined, and there is a possible danger of infection in taking a blood sample.

Extensive developmental work has been done on tests of the urine [3] and breath.[4] They have been refined so that they now are of practical value. The saliva test

From the Northwestern Traffic Safety Institute.

1. National Safety Council, Committee on Tests for Intoxication: Tests for Driver Intoxication, National Safety Council, 20 North Wacker Drive, Chicago, 1937.
2. Gunn, H. M.: A Paper delivered before the prosecutors' section of the Ohio Bar Association, July 1936; available in mimeographed form from the National Safety Council, Committee on Intoxication, Chicago.
3. Heise, H. A.: The Specificity of the Test for Alcohol in Body Fluids, Am. J. Clin. Path. **4**: 182 (March) 1934.
4. Harger, R. N.; Lamb, E. B., and Hulpieu, H. R.: A Rapid Chemical Test for Intoxication Employing Breath, J. A. M. A. **110**: 779-785 (March 12) 1938.

is of proved accuracy and may come into as general use as the tests of the urine and breath.

Through urinalysis the alcohol in the blood and thus in the brain can readily and with fair accuracy be determined. It is the alcohol in the brain that affects the person, and not the gross amount drunk. Through the use of the test it is possible to tell the extent of intoxication. The Committee on Tests for Intoxication of the National Safety Council has determined the percentage of alcohol in the body fluids above which all persons will unquestionably be under its influence. A lower point has been determined that will, when coupled with supplementary evidence, serve as prima facie evidence of intoxication.[5] There are two objections to the use of urinalysis for establishing intoxication. The first is the difficulty of obtaining the specimen; the person to be tested may be either unwilling or unable to cooperate. The second is that it requires the services of a technically trained person, who is not always immediately available. However, specimens may be preserved indefinitely, allowing later checks to be made by the defense as well as the prosecution.

The breath test for alcohol, while somewhat less accurate than urinalysis, has important points in its favor. In the first place, an immediate result can be obtained. Secondly, the apparatus can be operated by any intelligent person after only a short course of training. Moreover, it is a simple matter to secure a specimen of breath. Both tests are rapidly coming into use by police authorities, and their value is being proved. The saliva test is of too recent development for proper appraisal.[6]

These chemical tests have made possible two attacks on the problem of the drinking driver. The first attack is in court; prosecutions based on the tests have been unusually successful. The second attack is less direct but just as significant; the tests make possible research into the relation of alcohol to accidents. Experimenters are able to find out through their use how much drinking occurs in the accident group of drivers and in the normal driving group; they can find out when this drinking occurs and the age and the sex of the drivers who drink. They can find from these tests just how much more liable a person is to be involved in an accident when he has been drinking than when he has not. Data can be uncovered on the relation between the drinking of drivers and the seriousness of accidents. In other words, by the tests it is possible to isolate an important factor in the accident problem—alcohol. If this important factor can be set apart, one can then more successfully analyze such other causes as speed, lighting, fatigue, inexperience and poor driving habits. These other causes may be more easily, more thoroughly and more accurately analyzed if the complicating factor of alcohol has been isolated. Thus quantitative chemical tests for alcohol are of unquestionable value in the ultimate solution of the accident problem.

With the research value of these tests in mind, the Evanston Police Department, the Northwestern University Traffic Safety Institute, then known as the Northwestern University Traffic Officers Training School, the Evanston Hospital Association, the St. Francis Hospital, the National Safety Council and the Chicago Motor Club, with Dr. Herman A. Heise as consultant, began on Feb. 1, 1935, a research to determine the amount of drinking involved in accidents which resulted in hospitalization. Urinalyses for alcohol were made for a total of 270 drivers over a period of three years.[3] Rather good cooperation was obtained from the drivers examined. A representative cross section of all drivers involved in injury accidents was thus obtained.

This experiment produced a figure which represented the percentage of drivers involved in serious accidents who had been drinking. It was a first step in the determination of alcohol as a causal factor in accidents. Not until the next step was taken, however, would this figure assume significance. For example, if it was found that 46 per cent of drivers involved in personal injury accidents had been drinking and then it was found that 46 per cent of all drivers had been drinking, the alcohol consumed would seem to have no bearing on accidents. However, if only 12 per cent of all drivers had been drinking and yet 46 per cent of the drivers involved in accidents had been drinking, it would appear that the drinking drivers were suffering more than their share of mishaps, and drinking would seem to be a causal factor in accidents.

TABLE 1.—*Hours of Testing*

| | Sat. | Sun. | Mon. | Tues. | Wed. | Thurs. | Fri. |
|---|---|---|---|---|---|---|---|
| 12- 2 a. m. | X | X | X | .. | X | .. | X |
| 2- 4 | X | X | X | .. | X | .. | X |
| 4- 6 | X | X | X | .. | X | .. | X |
| 6- 8 | X | X | .. | X | .. | X | .. |
| 8-10 | X | X | .. | X | .. | X | .. |
| 10-12 | X | X | .. | X | .. | X | .. |
| 12- 2 p. m. | X | X | .. | X | .. | X | .. |
| 2- 4 | X | X | .. | X | .. | X | .. |
| 4- 6 | X | X | .. | X | .. | X | .. |
| 6- 8 | X | X | X | .. | X | .. | X |
| 8-10 | X | X | X | .. | X | .. | X |
| 10-12 | X | X | X | .. | X | .. | X |

Therefore a study was initiated by the Northwestern University Traffic Safety Institute for the purpose of determining the extent of drinking among drivers; of obtaining, in other words, a "normal group." The "drunkometer," recently developed by Dr. R. N. Harger of the Indiana University School of Medicine for use in court, made such a study possible. This device makes a rapid and accurate analysis for alcohol possible.[4] In brief, the test is based on the bleaching of an acid solution of potassium permanganate by the alcohol in the alveolar air, which, of course, is part of the normal breath.

The apparatus was set up in a trailer, thus allowing it to be readily moved from location to location throughout the area which approximated the area in which the accidents of the first part of the study occurred. The apparatus, specially built by Dr. Harger, allowed a rapid analysis of the breath samples. Tests of the breath of a total of 1,750 subjects were made in the course of a week. Testing was continuous from midnight Friday, April 22, to 6 a. m. Monday, April 25. Samples were taken from 6 p. m. to midnight Monday, from 6 a. m. to 6 p. m. Tuesday, from midnight Tuesday to 6 a. m. Wednesday, from 6 p. m. to midnight Wednesday, from 6 a. m. to 6 p. m. Thursday, from midnight Thursday to 6 a. m. Friday and from 6 p. m. Friday to 2 a. m. Saturday, April 30 (table 1). This gave a complete sampling over the period of heaviest drinking, the week-end, and alternate daylight and darkness sampling during the week. Over the week-end three crews, each

5. The point representing "conclusive" evidence of alcohol influence was chosen as 0.15 per cent (1.5 parts per thousand) of alcohol in the blood or its equivalent in other fluids or tissues. The prima facie, or presumptive, value was chosen as 0.10 per cent of alcohol in the blood or its equivalent.

6. Friedmann, T. E., and Klaas, Rosalind: The Determination of Ethyl Alcohol, J. Biol. Chem. **114**: 63 (Aug.) 1936.

consisting of four testers, a supervisor and a uniformed police officer, worked on nine hour shifts. These crews were composed of Northwestern University students and police officers (Kemper fellowship students enrolled in the course in traffic police training.)

As about 25 per cent of the accidents in the previous study had occurred in territory where liquor was freely sold and 75 per cent of them had occurred in Evanston

TABLE 2.—*Percentage of Drivers in Normal Population by Blood Alcohol Content*

| Blood Alcohol (Parts per 1,000) | Percentage of Total Drivers in Each Group | Percentage of Total Drivers at Each Point or Above (Cumulative) |
|---|---|---|
| 1.5 and above | 0.42 | 0.42 |
| 1.4 | 0.28 | 0.70 |
| 1.3 | 0.14 | 0.84 |
| 1.2 | 0.21 | 1.05 |
| 1.1 | 0.31 | 1.36 |
| 1.0 | 0.55 | 1.91 |
| 0.9 | 0.58 | 2.49 |
| 0.8 | 1.08 | 3.57 |
| 0.7 | 0.97 | 4.54 |
| 0.6 | 0.90 | 5.44 |
| 0.5 | 0.89 | 6.32 |
| 0.4 | 1.44 | 7.75 |
| 0.3 or less | 4.33 | 12.09 |
| No alcohol | 87.93 | 87.93 |

or adjoining suburbs, where liquor is not sold, four of the eight locations chosen were in areas in which it was assumed that drinking drivers would be prevalent. The other four locations were in areas in which it was assumed that drinking drivers would not be very prevalent. The first four locations were on highways passing through Evanston for only a short portion of their length or on streets running into immediately adjoining territory where there were large numbers of taverns. The other four locations, where it was assumed that alcohol would be less prevalent, were well within the interior of Evanston. Actually no difference between the locations was found. This would indicate that because of the ease of movement in motor traffic, at least in limited areas, alcohol is evenly distributed, with little reference to its points of easiest accessibility.

The uniformed police officer stopped all cars in a purely chance order determined by the rate at which the experimenters doing the analyses could work. There was no discrimination as to type or price range of automobile. As soon as the police officer had stopped the car, he immediately retired from the picture so that there would be no hesitancy on the part of the subject through fear of prosecution. No attempt was made to explain the nature of the test to the drivers unless they showed active, intelligent interest in the test and testing procedure. Newspaper publicity was avoided.

Because some difficulty was anticipated in gaining the cooperation of the drivers approached, a technic was very carefully worked out to obtain the samples of breath. After the uniformed officer stopped the car, a tester approached the driver and after a short, set, introductory speech, asked six preliminary questions, such as "Are you bothered by headlight glare?" for the purpose of gaining his cooperation and to allow him to get over the strangeness of the situation. The driver was then presented with the specially constructed wide-mouthed white balloon (the large wooden mouthpiece facilitated inflation) enclosed in a cellophane envelop, so that there would be no possible objection on the grounds of sanitation. The assistants who approached the driver were dressed in physicians' white smocks for the dual purpose of making a favorable impression on the driver and of making themselves readily visible to other traffic, more especially during the night. Cooperation was readily gained from the drivers with the exception of twenty-four, who refused to be tested.

As soon as the sample of breath was obtained the experimenter wrote the subject's age and sex and the location and time of the test on a tag, which he then attached to the neck of the balloon. The balloon was taken to the trailer laboratory, where one of the testers immediately made a qualitative test on about 1,000 cc. of the breath to determine whether or not alcohol was present. In the event that alcohol was present a quantitative analysis was made on a standard "drunkometer." Breath volume was taken in conjunction with the regular carbon dioxide absorption tube. These tubes were weighed daily at the chemistry laboratory of Northwestern University by graduate students. All the weights were taken on the same balance.

These tests resulted in the establishment of a control group giving an accurate picture of the amount of drinking among drivers in the general population. Analyses were made on the basis of time of day, day of week, sex, age and amount of alcohol present.

## THE OCCURRENCE OF DRINKING

The sample of the general population tested showed that about 12 per cent of all the drivers on the road had been drinking and that about 2 per cent of the drivers on the road had been drinking so much that their blood contained 1 part of alcohol to 1,000 parts of blood (or 0.1 per cent), or enough to impair their driving ability. About one driver in every 250 had been drinking to such an extent that his blood contained 1.5 parts of alcohol to 1,000 parts of blood (or 0.15 per cent), enough to place him unquestionably under the influence of alcohol. Table 2 shows this in detail.

The hospital figures (table 3) show that 47 per cent of the drivers involved in personal injury accidents had been drinking, 25 per cent of the drivers so involved had over 1 part of alcohol to 1,000 parts of blood and 14 per cent had over 1.5 parts of alcohol to 1,000 parts of blood.

TABLE 3.—*Percentage of Drivers in Personal Injury Accident Group by Blood Alcohol Content*

| Blood Alcohol (Parts per 1,000) | Percentage of Total Drivers in Each Group | Percentage of Total Drivers at Each Point or Above (Cumulative) |
|---|---|---|
| 1.5 and above | 13.81 | 13.81 |
| 1.4 | 1.49 | 15.30 |
| 1.3 | 1.49 | 16.79 |
| 1.2 | 2.98 | 19.77 |
| 1.1 | 2.24 | 22.01 |
| 1.0 | 3.36 | 25.37 |
| 0.9 | 0.75 | 26.12 |
| 0.8 | 2.24 | 28.36 |
| 0.7 | 4.10 | 32.46 |
| 0.6 | 0.37 | 32.83 |
| 0.5 | 0.37 | 33.20 |
| 0.4 | 0.75 | 33.95 |
| 0.3 or less | 12.68 | 46.63 |

The relationship between the proportions of drivers in each blood alcohol group (1.5 parts per thousand, 1.4 parts per thousand and so on) for the general driving population compared with the accident group is the most significant contribution of this research. It will be discussed in detail later.

The percentage of drinking drivers by two hour periods for the entire week is shown in chart 1 and table 4. As testing was not continuous throughout the week but alternated between daylight and dark, the

resulting gaps in the chart were filled in by substituting the complementary hours of the following day. While this did not result in as accurate a curve as one drawn from a continuous sampling, it is doubtless sufficiently near the real curve for all practical applications. Conclusions that can be drawn from this curve are obvious. It definitely shows, for example, the preponderance of drinking over the week-end, a fact of common observation. It should be noted that the peak for Saturday night and Sunday morning goes higher and lasts longer than any other peak. This of course is because Sunday is a holiday.

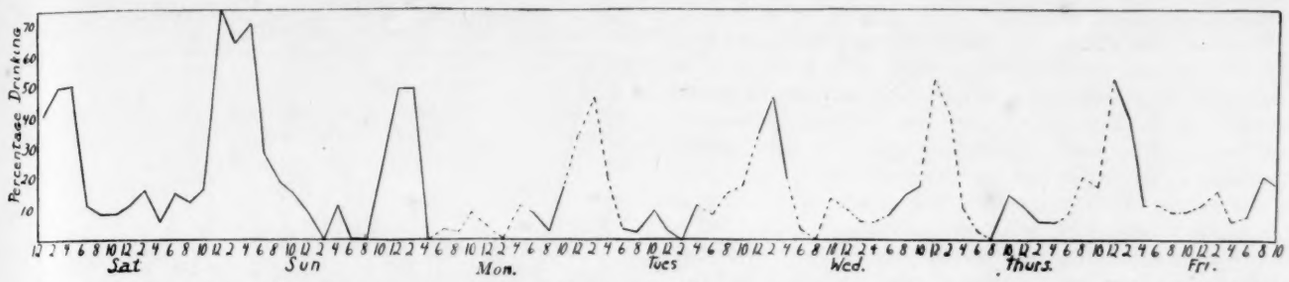


Chart 1.—When drivers drink. Percentage of drivers drinking tested in the control group by two hour periods for the week. The unbroken line indicates the percentage drinking and the broken line the percentage drinking on the following day in hours not tested on the day shown (used to give a continuous curve).

Because of the relatively few subjects, a similar curve for the personal injury accident group tested is not presented. Fluctuations in the curve would be so great as to render it valueless.

Comparisons have been made, however, on the basis of hour of the day between the personal injury accident group and the general population group. These comparisons were made both by the number of drinking drivers per two hour period and by the percentage of drinking drivers tested during each two hour period. Similar comparisons were made on a day of the week basis.

TABLE 4.—*Percentage of Drinking Drivers Tested by Two Hour Periods for the Week*

| | | Sat. | Sun. | Mon. | Tues. | Wed. | Thurs. | Fri. |
|---|---|---|---|---|---|---|---|---|
| Midnight | 12- 2 | 41.6 | 75.0 | 50.0 | .... | 34.5 | .... | 52.4 |
| | 2- 4 | 50.0 | 65.0 | 50.0 | .... | 46.7 | .... | 40.0 |
| | 4- 6 | 50.0 | 71.4 | 0 | .... | 20.0 | .... | 11.1 |
| | 6- 8 | 11.1 | 28.6 | .... | 3.4 | .... | 3.0 | .... |
| | 8-10 | 8.3 | 19.2 | .... | 2.7 | .... | 0 | .... |
| | 10-12 | 8.9 | 17.7 | .... | 9.1 | .... | 14.3 | .... |
| Noon | 12- 2 | 11.1 | 8.3 | .... | 3.1 | .... | 11.4 | .... |
| | 2- 4 | 15.8 | 0 | .... | 0 | .... | 6.1 | .... |
| | 4- 6 | 5.7 | 11.4 | .... | 11.4 | .... | 6.1 | .... |
| | 6- 8 | 15.2 | 0 | 8.8 | .... | 8.5 | .... | 7.4 |
| | 8-10 | 12.9 | 0 | 2.7 | .... | 15.2 | .... | 20.5 |
| | 10-12 | 16.9 | 19.4 | 17.1 | .... | 17.6 | .... | 17.8 |

The hour of the day comparison of the accident group and the general population group on the basis of number of drinking drivers is shown in table 5 and chart 2. That this comparison might be made, the curves were drawn on the basis of 100 as the total number of cases in each group. This method of computation is based on two assumptions: (1) that the sample for the location during the two hour period represents the incidence of alcohol in the city for that period and (2) that the volume of traffic at a base location in the city during the period represents the volume of traffic for the city during the period. The base location, incidentally, has been established for years and is constantly used as standard by the city traffic engineer. The volume count at the base location is considered roughly representative of Evanston traffic, so it serves as a constant basis of comparison.

Suppose, as an example, that 10 per cent of the drivers tested between 10 a. m. and 12 noon at a certain location have been drinking and that, according to previously made counts, 1,000 cars pass the base location during the two hour interval. Thus (assumption 1) of the 1,000 drivers, 100 had been drinking. If then, on this basis during the twelve two hour periods of the day, 2,000 drivers passing the base location had been drinking, the 100 drinking from 10 to 12 would represent 5 per cent of the total number drinking in the day. In the case of the accident group no such computation is needed, because the three year experience as taken by the hospitals closely approximates the real distribution.

TABLE 5.—*Number of Drinking Drivers by Two Hour Periods of the Day on the Basis of a Total of 100*

| Two Hour Period | Number Drinking, Accident Group | Number Drinking, Control Group |
|---|---|---|
| 12- 2 a. m. | 15.5 | 14.0 |
| 2- 4 | 11.7 | 5.9 |
| 4- 6 | 7.8 | 2.4 |
| 6- 8 | 5.8 | 4.2 |
| 8-10 | 4.9 | 6.0 |
| 10-12 | 4.9 | 9.3 |
| 12- 2 p. m. | 1.9 | 7.2 |
| 2- 4 | 4.9 | 6.3 |
| 4- 6 | 4.9 | 15.7 |
| 6- 8 | 16.5 | 10.8 |
| 8-10 | 14.6 | 8.4 |
| 10-12 | 6.8 | 9.9 |

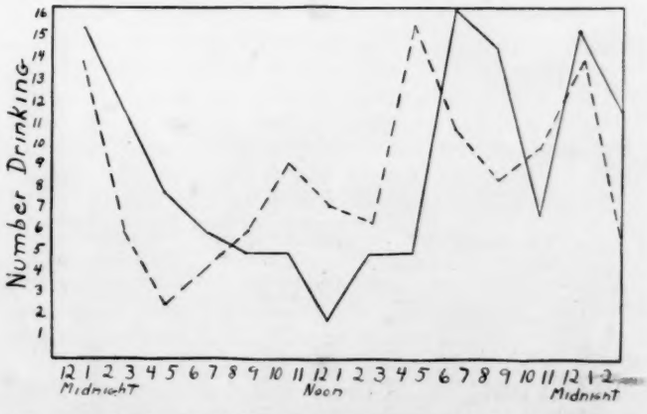


Chart 2.—Number of drinking drivers by hours of the day based on an assumed total of 100. The unbroken line indicates the accident group and the broken line the control group.

In this case it was necessary only to total the cases and find the percentage that each two hour group was of the total.

The charts showing the number of drinkers in the accident group and the normal group are similar in form. While there are certainly divergences in the curves, they can well be accounted for on the basis of small numbers, as the general form of the curves is

nearly the same. The similarity is especially noticeable in the case of the two peaks of both curves. The first is at about 6 in the evening and the other at midnight. The lag of the accident curve might well be the result of the difference between the time of accident occurrence and the time the report was made in the hospital, as often the time of occurrence of the accident was not shown on the card and the time the test was made at the hospital was used.

As both the curve for the accident group and that for the normal group show a peak at 6 p. m. and at midnight, it can correctly be held that such peaks would exist if the entire population was tested. However, caution must be used in assigning causes to these peaks. Possibly (and this is only conjecture) the 6 p. m. peak is the result of the corresponding traffic peak; that is, a large number of persons on the street would tend to imply a large number of persons drinking. The midnight peak might well be the result of an actual increase in drinking in combination with a still relatively large flow of traffic.

These data when presented on the basis of percentage of persons drinking give a somewhat different appearance (chart 3, table 6). Here there is only a single

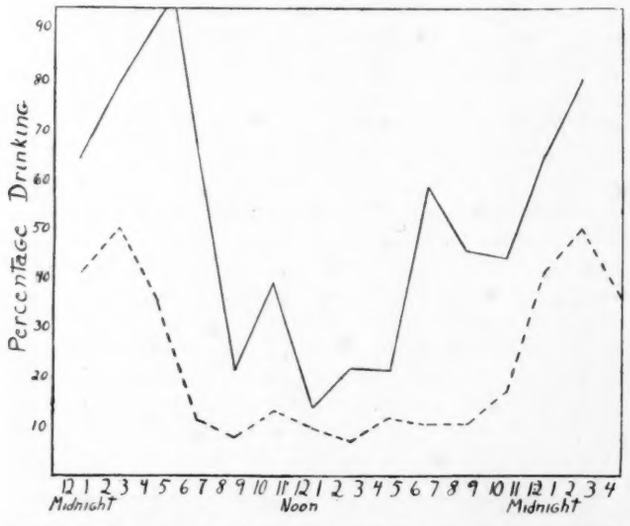


Chart 3.—Percentage of total drivers drinking by two hour periods. The unbroken line indicates the accident group and the broken line the control group.

TABLE 6.—*Percentage of Drinking Drivers by Two Hour Periods of the Day*

| Two Hour Period | Percentage Drinking, Accident Group | Percentage Drinking, Control Group |
|---|---|---|
| 12- 2 a. m. | 64.0 | 40.8 |
| 2- 4 | 80.0 | 50.0 |
| 4- 6 | 100.0 | 35.0 |
| 6- 8 | 66.6 | 10.2 |
| 8-10 | 20.8 | 6.8 |
| 10-12 | 38.5 | 12.8 |
| 12- 2 p. m. | 13.3 | 8.6 |
| 2- 4 | 20.8 | 6.5 |
| 4- 6 | 20.8 | 11.7 |
| 6- 8 | 58.6 | 9.9 |
| 8-10 | 45.4 | 10.0 |
| 10-12 | 43.7 | 16.3 |

peak, in contrast to the double peak shown in the case of the number of drinking drivers. Also the peak occurs much later. The curve for the general population group is quite regular, increasing till early morning, dropping sharply, running on a level from about 6 in the morning till 8 in the evening and then increasing till about 3 a. m. A peak showing 50 per cent of the drivers on the road as having been drinking is then reached. The curve for the percentage of drivers in personal injury accidents is similar though somewhat more irregular. This irregularity can be discounted to a large extent because of the smallness of the sample. A peak is reached in the period from 4 to 6 a. m. of 100 per cent drinking. This, however, is in all probability a result of the smallness of the sample, though doubtless the true peak would be quite high. A lag is also to be noted that is similar to the lag of the accident

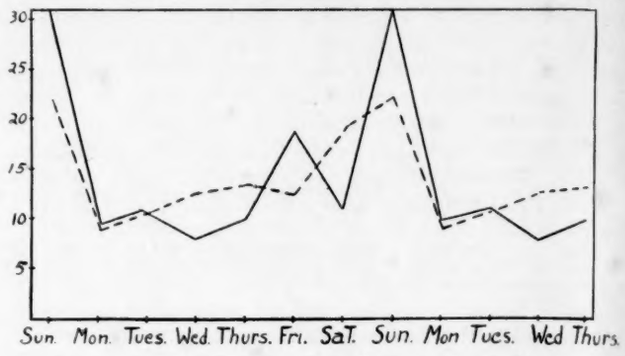


Chart 4.—Number of drinking drivers by day of the week on the basis of an assumed total of 100. The unbroken line indicates the accident group and the broken line the control group.

TABLE 7.—*Number of Drinking Drivers by Days of the Week on the Basis of a Total of 100*

| Day of Week | Accident Group | Control Group |
|---|---|---|
| Sunday | 31.2 | 22.04 |
| Monday | 9.6 | 9.0 |
| Tuesday | 11.2 | 10.8 |
| Wednesday | 8.0 | 12.8 |
| Thursday | 10.4 | 13.5 |
| Friday | 18.4 | 12.6 |
| Saturday | 11.2 | 19.2 |

group in the charts just discussed, where the number of drinking drivers was presented, and it can probably be accounted for in the same way.

Chart 4 and table 7 present the number of drinking drivers in each group by days of the week. For purposes of comparison, as in the case of the hour of the day presentation, these data were reduced to a percentage basis to obtain comparable curves. One point must be noted in the presentation of this curve; because the sample taken (table 1) included alternate periods of daylight and dark on alternate days during the week and if used uncorrected would result in an inaccurate representation, a correction was made. This correction consisted in combining the score for each day with that of the following day in the case of Monday and the previous day and the following day in the case of Tuesday, Wednesday and Thursday. This is better illustrated in table 8.

Again there is a striking similarity between the accident group and the control group. The control group again presents a very regular curve, while the curve for the accident group, because of the small numbers, is somewhat more irregular, although running quite close to that of the control group. The peak for both groups occurs over the week-end, Saturday and Sunday. The peak is actually reached early Sunday morning, as shown in the chart for the week by hours. Thus the largest number of persons drinking is found early Sunday, with the number dropping off sharply and then gradually increasing till the next week-end.

The points discussed in connection with number of persons drinking would apply equally well in a discus-

sion of the percentage of persons drinking (chart 5, table 9). Unlike the peak for hour of the day, the traffic peak for days of the week and the peak for percentage of drinking are the same. The curve for the percentage of drinking drivers in personal injury accidents is irregular in comparison with the curve for the normal group, and the week-end increase is followed by a sharp drop and then a gradual build-up to the week-end. It should be noted that there are over twice as many drinking drivers during the week-ends as on week days.

TABLE 8.—*Correction for Curve Shown in Chart 7*

| | | |
|---|---|---|
| Sunday | A complete day, no correction | |
| Monday (dark) | *Average of Mon. and Tues.* Used for Monday score | *Average of Mon., Tues. and Wed.* Used for Tuesday score |
| Tuesday (light) | *Average of Tues. and Wed.* | |
| Wednesday (dark) | *Average of Wed. and Thurs.* | *Average of Tues., Wed. and Thurs.* Used for Wednesday score |
| Thursday (light) | *Average of Thurs. and Fri.* Used for Friday score | *Average of Wed., Thurs. and Fri.* Used for Thursday score |
| Friday (dark) | | |
| Saturday | A complete day, no correction | |

Unfortunately no data were secured as to the age of the drivers in the personal injury accident group. However, the results of an age tabulation in the control

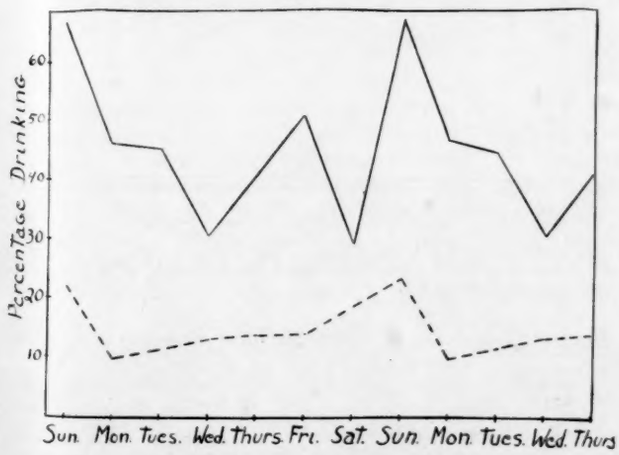


Chart 5.—Percentage of drivers drinking by day of the week. The unbroken line indicates the accident group and the broken line the control group.

TABLE 9.—*Percentage of Drinking Drivers by Days of the Week*

| Day of Week | Accident Group | Control Group |
|---|---|---|
| Sunday | 67.2 | 21.5 |
| Monday | 46.2 | 10.0 |
| Tuesday | 45.1 | 11.5 |
| Wednesday | 31.3 | 13.4 |
| Thursday | 41.9 | 14.0 |
| Friday | 51.1 | 14.2 |
| Saturday | 29.2 | 18.6 |

study are of interest (chart 6, table 10). A definite peak showing over 28 per cent of drinking drivers is found at the age level from 25 to 30 and is followed by a gradual decline. The extreme lower and the extreme upper age limits were not determined, but the lower limit was probably about 16 or 17 and several persons in the 70's were tested.

Little comment is needed on the significance of this curve. It follows quite closely the expected. It is an accurate indication of the relation between age and driving after drinking.

Since there are many more men drivers than women and women do most of their driving during the day, a much smaller percentage seemed to have been drinking.

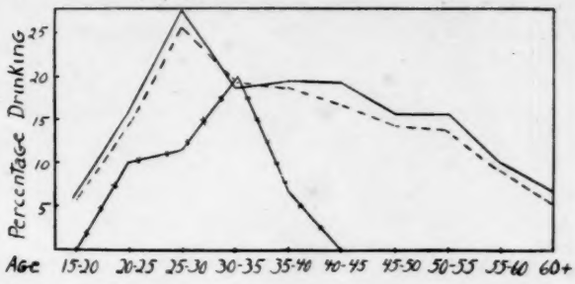


Chart 6.—Percentage of drinking by age. The unbroken line is for men, the line marked with crosses for women and the broken line for all cases.

TABLE 10.—*Percentage of Total Drinking by Age*

| Age | Men | Women | Total |
|---|---|---|---|
| 15-20 | 5.7 | 0 | 4.8 |
| 20-25 | 15.5 | 10.3 | 14.9 |
| 25-30 | 27.7 | 12.0 | 26.2 |
| 30-35 | 18.4 | 21.2 | 18.7 |
| 35-40 | 19.5 | 6.7 | 18.1 |
| 40-45 | 19.7 | 0 | 16.6 |
| 45-50 | 15.7 | 0 | 14.6 |
| 50-55 | 15.5 | 0 | 14.3 |
| 55-60 | 10.0 | 0 | 8.7 |
| 60 and over | 6.9 | 0 | 5.9 |

However, when the figures are presented on the basis of percentage drinking by hour of the day (chart 7, table 11) there is little difference between the curve for men and that for women. The peak reached by women at 4 and 5 a. m. is probably spurious and due to the small number of cases, as very few women proportionately were driving at that time. Additional data are needed here to smooth out these curves. No tabulation on the basis of sex was made in the accident group because of the smallness of numbers.

## RELATION OF ALCOHOL TO ACCIDENTS

There are thirty-three times as many drivers whose blood contains 1.5 parts per thousand of alcohol in a group of drivers involved in personal injury accidents as in the general driving population. There are ten times as many whose blood contains 1.3 parts per thousand as there are in the general population. Presented graphically, these are two points on a regularly descending curve that approaches a ratio of 1 to 1 at some point near 0.5 part per thousand. The correlation between alcohol in the blood and increased accident expectancy was worked out on the basis of the data of this study at 0.76 (plus or minus 0.07).

The point in the alcohol content of the blood at which this 1 to 1 ratio is reached, that is, the point at which the same percentage of drivers appears in the personal injury accident group as in the general population, is of considerable significance. There has been much discussion of the relation between alcohol in the blood and intoxication, based both on observation and on the use of objective tests, in an attempt to set a point at which the drinking driver should be removed as potentially dangerous. The curve mentioned (chart 8, table 12) goes far toward showing where this point occurs, for, as soon as more drinking drivers appear in the personal injury accident group than in the general population,

the ratio goes over 1 to 1. Alcohol can be considered as causing this increase in accidents over the expected. From these data it would appear that this point is about 0.5 to 0.6 part of alcohol to 1,000 parts of blood. Additional cases are needed here to obtain a smoother, more reliable, curve. It is not suggested that

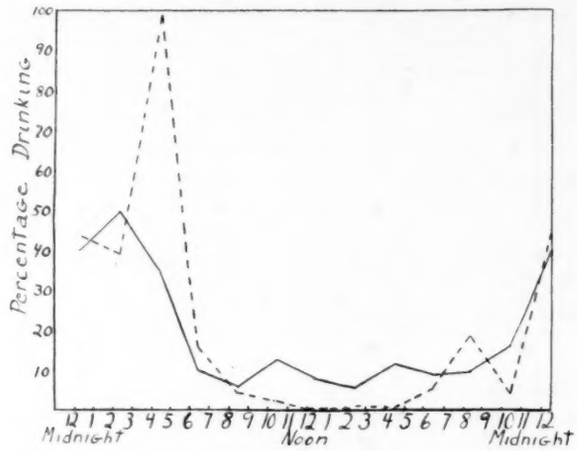


Chart 7.—Percentage of drinking by hours of the day on the basis of sex. The unbroken line is for men and the broken line for women.

TABLE 11.—*Percentage of Drinking by Two Hour Periods on the Basis of Sex*

| Two Hour Periods | Entire Group | Women Only |
|---|---|---|
| 12- 2 a. m. | 40.8 | 44.4 |
| 2- 4 | 50.0 | 40.0 |
| 4- 6 | 35.0 | 100.0 |
| 6- 8 | 10.2 | 16.7 |
| 8-10 | 6.8 | 4.0 |
| 10-12 | 12.8 | 2.9 |
| 12- 2 p. m. | 8.6 | 0 |
| 2- 4 | 6.5 | 0 |
| 4- 6 | 11.7 | 0 |
| 6- 8 | 9.9 | 5.3 |
| 8-10 | 10.0 | 18.2 |
| 10-12 | 16.3 | 4.3 |

a point for the blood alcohol content just over the 1 to 1 ratio be used for other than prima facie evidence of intoxication, but the location of this point should go far toward determining the lower limits of blood alcohol at which persons are considered under the influence of alcohol.

Thus a concomitant variability is demonstrated. It has been shown further that there are several times as many drinking drivers in accidents as in the general driving population. But does a causal relationship exist? In other words, is this increase in alcohol actually the cause of the increased accidents? Is there possibly a factor or factors causing both the increase in alcoholic content of the blood and the increase in chances of accident? Would there be any basis for advancing some other cause for this relationship?

Among other possible causes, might not a common one be darkness? Could this relationship exist because people normally drink at night, when darkness with its effect on visibility, causes personal injury accidents to increase? People drink at night because they have free time then; accidents happen at night, when visibility is poor. Then is this relationship between accidents and alcohol just chance? Is darkness really the cause? Table 13 and chart 9 prove that this is not the case. Personal injury accidents when related to the amount of traffic on the road, or exposure, have their peak after midnight. (Divide the traffic count by two hour periods by the personal injury accidents by two hour periods.) If darkness was the cause of this increase, it would be logical to expect the curve to be approximately the same during all hours of darkness. Instead, on the average it is 2.35 times as high in the hours of darkness after midnight as it is in the hours before. Alcohol, it must be remembered, has its peak after midnight, just as do personal injury accidents (table 6 and chart 3).

However, it might be argued that speeds increase. True, but why do they increase? There are two possible major causes. The first is the decrease in congestion and the second the increase in alcohol. Any increase in speed as a result of a decrease in congestion would tend to be offset as a causative factor by the decrease in congestion. While speed doubtless plays an important part in causing accidents, it might well be treated as a symptom of an underlying cause. Certainly alcohol, with its removal of inhibition, might well be a cause of increased speeds and thus of accidents. It must further be remembered that, unlike decreasing congestion, alcohol offers nothing to compensate for the increase in speeds which it causes. Rather, by increasing reaction time and decreasing perceptual ability [7] it makes the speed still more dangerous.

Fatigue [8] might be a cause of accidents occurring at such times and in such amounts as to displace alcohol

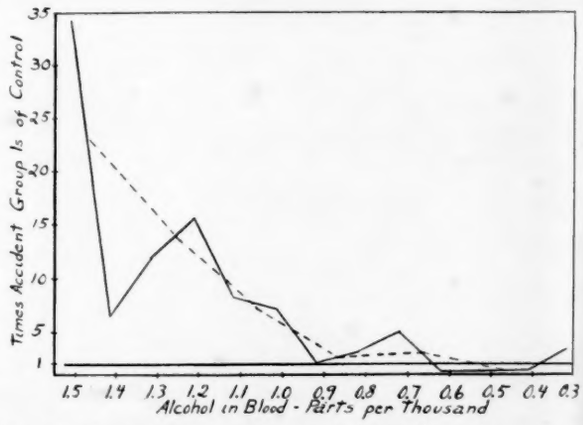


Chart 8.—Number of times drivers in the accident group are of drivers in the control group for each amount of blood alcohol. The broken line shows the curve smoothed.

TABLE 12.—*Number of Times Accident Group is of Control for Each Amount of Alcohol*

| Blood Alcohol Content | Times (Accident Group Over Control) | Accident Group Is of Control (Smoothed Curve [Average at 2 Parts]) |
|---|---|---|
| 1.5 and above | 33.12 | 21.98 |
| 1.4 | 5.34 | |
| 1.3 | 10.80 | 13.03 |
| 1.2 | 14.54 | |
| 1.1 | 7.30 | 6.53 |
| 1.0 | 6.10 | |
| 0.9 | 1.28 | 1.78 |
| 0.8 | 2.08 | |
| 0.7 | 4.23 | 2.39 |
| 0.6 | 0.41 | |
| 0.5 | 0.48 | 0.48 |
| 0.4 | 0.52 | |
| 0.3 or less | 2.93 | 2.93 |

as the assumed cause of accidents. Certainly, like drinking, fatigue occurs most commonly at night. Like drinking too it results in diminished ability to drive. However, an examination of the facts will show that

7. Miles, W. R.: Psychological Effects of Alcohol on Man, in Emerson, Haven: Alcohol: Its Effects on Man, New York, Macmillan Company, 1935, chapter 10.

8. Fatigue for the purpose of this discussion is taken to mean the effects of prolonged activity whether they have only an actual physical basis, such as an actual physical disability, or only a mental basis, such as the effect of monotony, or a combination of these two.

it would be impossible for fatigue to account more than superficially for the increase in accidents associated with alcohol.

It is difficult to study the problem of fatigue. No methods that will reliably and validly measure fatigue are available. Actual physical losses in ability are difficult to disassociate from the effects of monotony, as the results of the two factors may be the same. Numerous attempts have been made to measure, subjectively at least, the physical aspects of fatigue, but all too often the results have failed to be conclusive. One measure of fatigue that has found general acceptance is accident records. Long experience in industry has shown that accidents increase in proportion to the time spent at work, with slight decreases as monotony is relieved as the end of the working period approaches. It is probably safe to assume that the curve for automobile accidents caused by fatigue [9] would be similar to that obtained for accidents caused by the driver's falling asleep. Difficulties in assigning causes of accidents may have resulted in some inaccuracies, but the general shape of this curve is reliable. It shows that the largest number of accidents caused by the driver's falling asleep occurs at about 4 o'clock in the morning. Comparison of this curve with the curve showing the number of drinking drivers or that showing the number of personal injury accidents involving alcohol shows little relation. While the fatigue curve has its peak in the early morning hours, the curve for drinking drivers and the curve for accidents have their peaks in the early and late evening hours.

There are several further bits of evidence tending to prove alcohol rather than fatigue the prime causative factor. First, in the area of this experiment fatigue would be at a minimum. The largest part of the area was unquestionably urban, with a heavy flow of traffic. The average driver would be driving only a comparatively short distance. Because of this fact and the nature of the route, monotony would not be the important factor in causing fatigue that it might be on a highway, where there would be no relief from driving at a relatively constant speed on long stretches of road. Another reason to minimize fatigue is that any data gathered on fatigue as a cause of accidents tend to place it as a causative factor in not more than 2 or at the most 3 per cent of the accidents. The most reliable study so far reported, done in Massachusetts by the Registry of Motor Vehicles and based on actual investigations rather than drivers' reports, shows that 1.98 per cent of the total accidents were caused by sleep or fatigue. Contrast that with this study, which shows that 47 per cent of drivers had been drinking and that 14 per cent had drunk so much that they were unquestionably under the influence of alcohol. Several other points should be noted in passing. For instance, and no experimental evidence exists to back this statement, quite possibly the fatigued driver is more inclined to compensate for his disability than is the drinking driver. Probably the fatigued driver will slow down and in general drive more carefully than the drinking driver. Of prime importance is the ability to recover much more readily from fatigue than from alcohol. Stopping the car, getting out and walking, drinking coffee and other measures will at least temporarily dispel fatigue. This, unfortunately, is not true of alcohol.

With the data at hand it is impossible to make an accurate, complete statement of the relation of fatigue and alcohol as causes of accidents. The previous discussion has of necessity been based more on conjecture than on facts. One point, however, must always be remembered in any discussion of this problem; the effects of fatigue are always heightened by alcohol. Reaction times slowed up by fatigue are even slower when alcohol is present. Vision blurred by need for rest is even more blurred with the addition of alcohol. Fatigue can and does cause a large number of accidents, but all available evidence tends to minimize it as a cause when compared with alcohol.

Another reason for this concomitant variability of personal injury accidents with drinking should be considered. Possibly the person who drinks is the one who ordinarily drives recklessly and is prone to accidents. Perhaps a certain mental makeup is expressed in drinking and also in proneness to accidents. No positive answer can be given to this question. The possibility is minimized, however, when one considers that the person prone to accidents is even more prone to them after drinking, for alcohol unquestionably increases reaction time and affects vision, ability to coordinate, judgment and the other abilities so necessary in the operation of a motor car. Until experimental evidence is presented to prove otherwise, it seems logical to accept the fact that not speed, not darkness, not inherent proneness to accidents in drivers who drink, but rather alcohol, with its demonstrable effects, is the major cause of the high proportion of personal injury accidents in the hours after midnight. The part

TABLE 13.—*Personal Injury Accidents (Drinking and Non-drinking Drivers) Related to Traffic by Hour of the Day*

(Expressed as a percentage of total traffic and then based on an assumed total of 100)

| Two Hour Periods | Personal Injury Accidents Corrected for Traffic |
|---|---|
| 12- 2 midnight | 4.3 |
| 2- 4 | 6.3 |
| 4- 6 | 9.6 |
| 6- 8 | 2.7 |
| 8-10 | 3.7 |
| 10-12 | 3.9 |
| 12- 2 | 4.1 |
| 2- 4 | 2.8 |
| 4- 6 | 3.4 |
| 6- 8 | 3.3 |
| 8-10 | 3.8 |
| 10-12 | 2.1 |

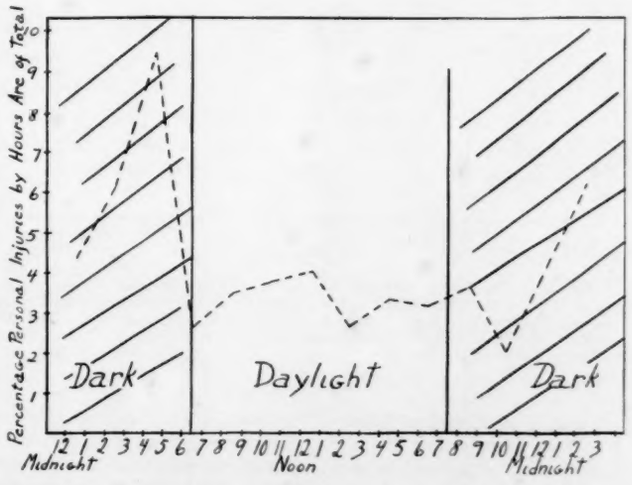


Chart 9.—Personal injury accidents related to traffic, expressed as percentage of total traffic and then based on an assumed total of 100.

9. Baker, J. S.: Too Long at the Wheel (pamphlet), National Safety Council, 1935.

of these other factors, though, should not be forgotten. Additional work is needed to determine their relation to the accident problem. They unquestionably exist and in themselves do cause accidents. It must be further remembered, however, that alcohol will definitely heighten the effect of any or all of these factors. Thus poor visibility because of darkness is even poorer when the driver has been drinking; increased speeds become more hazardous after alcohol has increased reaction time; drivers prone to accidents become more so after the depressive effects of alcohol release their inhibitions; the effects of fatigue are increased by drinking.

If alcohol is a general, basic, underlying cause of personal injury accidents, two things would be expected:

1. As alcohol varies, personal injury accidents should vary. That is, an increase or decrease in the percentage of drinking drivers should be accompanied by an increase or decrease in the percentage of drivers involved in personal injury accidents.

2. As alcohol varies, personal injury accidents involving alcohol should vary. That is, an increase or decrease in the percentage of drinking drivers should be accompanied by an increase or decrease in the percentage of personal injury accidents in which one or more of the drivers had been drinking.

The first statement is proved by a correlation between the percentage of drinking drivers by two hour periods with the percentage of drivers in personal injury accidents, corrected for traffic, of 0.68 plus or minus 0.08. Chart 10 and table 14 further illustrate this point. In other words, it is demonstrated that there is a rather close correlation between drinking and personal injury accidents.

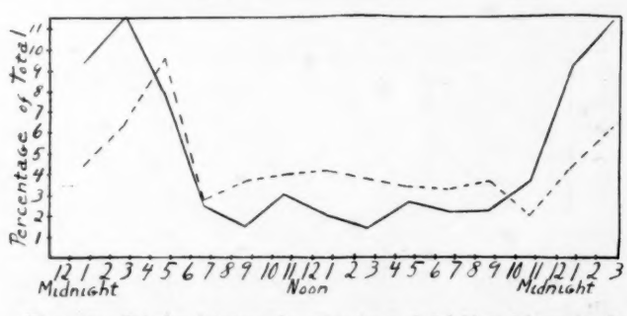


Chart 10.—Relation between the percentage of drinking drivers in the general population by hours and the percentage of drivers in the personal injury accident group by hours, based on an assumed total of 100. The broken line is for the accident group and the unbroken line for drinking drivers (control group).

TABLE 14.—*Relation Between Percentage of Drinking Drivers by Hours and Percentage of Drivers by Hours in Personal Injury Accidents Based on an Assumed Total of 100*

| Two Hour Periods | Personal Injury Accidents | Drinking Drivers |
|---|---|---|
| 12- 2 a. m. | 4.3 | 9.3 |
| 2- 4 | 6.3 | 11.5 |
| 4- 6 | 9.5 | 8.0 |
| 6- 8 | 2.7 | 2.4 |
| 8-10 | 3.6 | 1.5 |
| 10-12 | 3.9 | 3.0 |
| 12- 2 p. m. | 4.1 | 2.0 |
| 2- 4 | 2.7 | 1.5 |
| 4- 6 | 3.4 | 2.7 |
| 6- 8 | 3.3 | 2.3 |
| 8-10 | 3.7 | 2.3 |
| 10-12 | 2.1 | 3.7 |

The second statement is proved by a correlation between the percentage of drinking drivers by two hour periods and the percentage of drinking drivers involved in accidents of 0.73 plus or minus 0.07. It is further borne out by chart 4, which illustrates the close time relation of these two groups.

One more significant fact pointing toward alcohol as a causative factor must be noted. As personal injury accidents exceed traffic, drinking increases, and as the curve representative of this relationship drops, so does the curve for drinking drivers (table 15). In other words, as personal injury accidents increase over the expected, drinking drivers increase similarly. It seems entirely logical to place the responsibility for this increase in accidents with alcohol. A definite concomitant variability has certainly been demonstrated, and evidence has been given to show that a causal relationship must exist.

TABLE 15.—*Relation of Personal Injury Accidents to Traffic*

(Number of times percentage of total by two hour periods personal injury group is of traffic or vice versa)

| Hour of Day | Times Greater Personal Injury Accidents Are Than Traffic | Times Greater Traffic Is Than Personal Injury Accidents |
|---|---|---|
| 12- 2 a. m. | 1.23 | .... |
| 2- 4 | 1.86 | .... |
| 4- 6 | 2.75 | .... |
| 6- 8 | .... | 1.32 |
| 8-10 | 1.04 | .... |
| 10-12 | 1.14 | .... |
| 12- 2 p. m. | 1.16 | .... |
| 2- 4 | .... | 1.28 |
| 4- 6 | .... | 1.02 |
| 6- 8 | .... | 1.06 |
| 8-10 | 1.10 | .... |
| 10-12 | .... | 1.68 |

Thus it appears that a close causal relationship exists between alcohol and accidents.

## CONCLUSIONS

1. The highest percentage of drinking drivers occurs in the early morning hours and over the week-end.

2. The largest number of drinking drivers occurs in the early evening and over the week-end.

3. The peak age for drinking drivers is from 25 to 30.

4. Women drink and drive as much as men when the number of women driving at various hours of the day is considered.

5. The percentage of drinking drivers in the general population varies as does the percentage of drinking drivers in the personal injury accident group but falls considerably lower at all times.

6. The percentage or number of drivers involved in personal injury accidents varies as does the percentage or number of drinking drivers.

7. As the blood alcohol content increases, the number of drivers appearing in the personal injury accident group increases out of all proportion over that in the general driving population.

8. As alcohol increases, accidents increase and at a rate somewhat proportionate to the increase in alcohol.

9. Equal percentages of drinking drivers are found in the accident group and in the general population group at a point near 0.5 part of alcohol per thousand parts of blood, indicating that alcohol in that amount is not necessarily a significant cause of accidents.

10. It has not yet been objectively and conclusively proved just how important a causative factor alcohol is, and, because of the complexity of the whole accident problem, it may never be proved. The data gathered in this study, however, point in one direction only. They confirm a self-evident fact, that alcohol is a major cause of automobile accidents.

SUMMARY

A study was made of the drinking of drivers involved in personal injury accidents and of the drinking of drivers in the general population. The second study served as a control of the first, allowing conclusions to be drawn as to the part alcohol plays in accidents.

A total of 270 persons were tested in the first study. Drivers involved in personal injury accidents who accompanied the persons injured to a hospital or drivers who themselves were injured were tested by urinalysis for alcohol.

A total of 1,750 persons were tested in the second study. Drivers were chosen at random from an area comparable to that of the first study. A complete testing laboratory, with the Harger "drunkometer," was set up in a trailer, allowing breath tests for alcohol to be made immediately.

Comparisons were drawn between the accident and control groups on the basis of hour of the day, day of the week and blood alcohol content. The control group was presented on the basis of age as related to drinking and sex as related to drinking. The time and the amount of drinking were related to the time and the number of personal injury accidents.

# ANOREXIA NERVOSA

## A METABOLIC DISORDER OF PSYCHOLOGIC ORIGIN

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AND
H. H. HYLAND, M.D.
TORONTO

In 1873, under the title of "anorexia nervosa," Sir William Gull [1] described a syndrome characterized by extreme emaciation and amenorrhea in the absence of any demonstrable structural disease. The illustration is a reproduction of the pictures of one of his early patients before and after treatment. About the same time Lasègue [2] described the condition as "hysterical anorexia." Numerous articles on the subject since then have added little to the clear, concise accounts of these authors.

The disorder occurs chiefly in adolescent girls, less commonly in men. Following some prolonged emotional conflict, either avowed or concealed, the appetite fails and the intake of food becomes grossly insufficient, leading to loss of weight. Commonly there are mild symptoms, such as uneasiness after food, epigastric distress or constipation, which provide a further excuse for the anorexia. Emaciation increases and the patient's health becomes an object of great concern to her family. Yet she remains quick, alert, active and restless and denies ill health until emaciated to a degree not seen in patients with organic disease still able to get about. "These wilful patients are often allowed to drift their own way into a state of extreme exhaustion, when it might have been prevented by placing them under different moral conditions" (Gull). When emaciation is at its greatest, weakness increases and edema of the lower extremities may supervene. Occasionally death results from starvation. Amenorrhea may appear early or only after considerable loss of weight has occurred. When the syndrome is well developed the temperature is often subnormal, the pulse rate and the blood pressure low.

Ryle [3] remarks on the tendency of "physicians subject to the lure of endocrinology" to look for the cause of this syndrome in a primary deficiency or disharmony of the internal secretions. The ovaries, thyroid, adrenals and pituitary have all been blamed. In recent years attention has been directed more and more to the hypophysis, and the finding of low basal metabolic rates and altered sugar tolerance, in addition to emaciation and amenorrhea, would appear to support this idea. Recently Sheldon [4] has suggested that anorexia nervosa, which he recognizes clearly as a definite syndrome, may be "a 'functional' Simmonds' disease—a pituitary 'black-out' of psychological origin." This conception has won the approval of others.[5]

On the other hand, in the literature on Simmonds' disease one finds reports of many cases that appear to present the typical picture of anorexia nervosa. Some of these patients have responded well to the administration of various pituitary extracts and their recovery has been taken as evidence of the correctness of the diagnosis of Simmonds' pituitary cachexia. The two syndromes have a superficial similarity but, in our opinion, they are fundamentally different.

It is our purpose in this paper to report eight cases of anorexia nervosa and to point out in discussion the nature of the disorder and its various manifestations. Reasons will be presented to support the belief that this metabolic disorder is based primarily on psychologic disturbance and that its various manifestations should not be attributed to dysfunction of any endocrine gland.

### REPORT OF CASES

The following case histories are reported in brief. All the patients were carefully examined and special investigations were carried out as indicated. Negative observations, however, are mentioned only if of particular significance.

CASE 1.—E. L., a Jewish girl, aged 15, was admitted to the hospital Feb. 11, 1932. She had come to the outpatient clinic because her mother was concerned about the patient's loss of weight. Five months previously she weighed 75 pounds (34 Kg.) but had gradually lost 16 pounds (7 Kg.) during that time. Menstruation had commenced in 1930. The periods were fairly regular, occurring every twenty-eight days until September 1931, since which date she had not menstruated. She stated that she did not have any gastrointestinal symptoms but said that she had been eating very small meals because of abdominal discomfort that followed a large intake of food.

The patient was emaciated. She did not appear acutely ill but was apprehensive about being in the hospital. The secondary sex characteristics and distribution of hair were essentially normal. There was no anemia. The blood pressure was 82 systolic, 50 diastolic, the basal metabolic rate —37 per cent, the pulse rate from 60 to 95 per minute, the temperature from 96 to 99 F. The fasting blood sugar determined on six occasions varied between 69 and 77 mg. per hundred cubic centimeters. The first sugar tolerance curve (100 Gm. of dextrose) showed a slow and prolonged rise; after eight days, during which time she began to eat voraciously, the test was repeated with only 50 Gm. of dextrose and the curve was flat (table 1).

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Prof. Duncan Graham gave the authors permission to report cases 1, 3, 4, 5 and 6, and Prof. C. B. Farrar and Dr. Trevor Owen gave permission to report case 7.

1. Gull, W. W.: Anorexia Nervosa (Apepsia Hysterica; Anorexia Hysterica), Clin. Soc. Tr. 7: 22, 1874. In 1868 Gull (Address in Medicine, Lancet 2: 171, 1868) had used the term "hysteric apepsia" to describe the same condition.

2. Lasègue E. C.: On Hysterical Anorexia, M. Times 2: 265, 1873 (translated from Arch. gén. de méd., 1873).

3. Ryle, J. A.: Anorexia Nervosa, Lancet 2: 893 (Oct. 17) 1936.

4. Sheldon, J. H.: Anorexia Nervosa with Especial Reference to Physical Constitution, Lancet 1: 369 (Feb. 13) 1937.

5. Langdon-Brown, Walter: Lancet 1: 473 (Feb. 20) 1937. Dunn, C. W., ibid. 1: 723 (March 20) 1937.

At the time of admission her perceptions were a little slow and her memory defective. Emotionally she was fairly stable. On enquiry she stated that she had been worried and unhappy at home for the past six months and that this had contributed to her lessened intake of food. The only causes for worry that she would admit were the cessation of menstruation and the fact that her mother was "always fussing about her."

Under observation in the hospital, she showed considerable variability in mood. Most of the time she seemed content and cheerful, but there were days when she was depressed and uncommunicative. A hypochondriacal trend developed and she talked at great length about her digestive system. She said that she could not taste food properly and demanded an x-ray examination of her intestine because there seemed to be something wrong with the passage of food through it. She complained that she did not have the proper feeling when her bowels moved and asked that this be investigated. Under reassurance her appetite increased greatly and she commenced to eat ravenously and complained that no matter how much she ate she was never satisfied. On discharge from the hospital, February 23, her weight was 64½ pounds (29 Kg.) and basal metabolic rate —28 per cent.

The diagnosis lay between anorexia nervosa and acquired anterior pituitary deficiency. Despite the normal appearance

Patient with anorexia nervosa, before and after treatment (Sir W. W. Gull, 1873).

of secondary sex characteristics and the normal distribution of body hair, the latter diagnosis was favored.

After discharge she was given injections of antuitrin 1 cc. intramuscularly twice a week, from March to July 1932. Her appetite continued to increase.

On readmission to the hospital for ten days in April she was found to be eating 3,400 calories each day. Her weight was 73 pounds (33 Kg.), the basal metabolic rate —16 per cent, the blood pressure 102 systolic, 52 diastolic. Her general appearance was much improved but she was still introspective and hypochondriacal.

Examination October 31, three months after antuitrin therapy was discontinued, showed a marked improvement in her mental attitude. The excessive desire for food had subsided and she was eating ordinary amounts. She was bright and agreeable and was taking part in games at school. She no longer displayed obsessions about her gastrointestinal tract. This improvement was maintained. Menstruation returned in November 1933 and was regular thereafter. Her weight in January 1934 was 86 pounds (39 Kg.), height 4 feet 8 inches (142 cm.), basal metabolic rate —5 per cent, blood pressure 112 systolic, 76 diastolic. Mentally and emotionally she appeared normal. In view of the continued improvement after cessation of endocrine therapy it was felt that a diagnosis of anterior pituitary insufficiency was untenable and that the diagnosis of anorexia nervosa was established.

The patient was seen again Feb. 19, 1938. She had been working in a factory for the past four years and had not missed any time owing to ill health. There had been no gastrointestinal symptoms whatever. Menstruation had occurred normally every four weeks during this time. Her height was 4 feet 8¼ inches (142 cm.), weight 99½ pounds (45 Kg.), blood pressure 122 systolic, 84 diastolic. The patient stated that she realized that her former illness was the result of a desire on her part to have things her own way in the home. Her two sisters and a brother, all older than herself, were living at home and would order her about. When she was sick her mother became very anxious and would take her part, aiding her in getting her own way. The two sisters and brother are now married and living elsewhere. Her life at home has been quite congenial since they departed.

CASE 2.—D. K., a girl aged 18, first examined May 8, 1933, was in good health—weight about 108 pounds (49 Kg.)—until the autumn of 1932, when she was sent to boarding school. Her menstrual periods ceased at that time. Because of a coincident gradual increase in weight to 120 pounds (54 Kg.) she began to restrict her diet, avoiding carbohydrates and fats. Progressive loss of weight resulted. Her appetite remained good but she began to complain of epigastric fulness whenever she ate more than a small quantity of food. She tired easily and worried greatly about constipation, which she believed was responsible for her symptoms. In January 1933 she menstruated once but had not menstruated subsequently. Since February, worry about her condition had led to difficulty in sleeping.

The patient was very thin but otherwise well developed, height 5 feet 4 inches (163 cm.), weight 91 pounds (41 Kg.), temperature 98.6 F., pulse rate 60 per minute, blood pressure 98 systolic, 70 diastolic. There was no anemia. Her hands were cold and reddish blue. The colon was palpable and tender. Enquiry showed that the patient had always been ambitious, sensitive and conscientious. She had done well at school and was working very hard because she dreaded mediocre standing. Her mother suffered with paralysis agitans and the patient tended to be depressed when at home.

A diagnosis of anorexia nervosa was made.

By June her weight had fallen to 88 pounds (40 Kg.). She took high standing in matriculation examinations and returned to her home in the country, refusing to be admitted to the hospital for more complete investigation and treatment. During the subsequent year at home her weight gradually went down to 70 pounds (32 Kg.). On investigation at another medical center in the summer of 1934 the basal metabolic rate was found to be —25 per cent; thyroid extract 1½ grain (0.1 Gm.) daily was prescribed. In the autumn of 1934 the patient entered the university and following this showed gradual improvement. By Christmas her weight had increased to 93 pounds (42 Kg.). When seen Jan. 31, 1935, her weight was 100 pounds (45 Kg.), she was eating well and she had menstruated a few weeks before. She is now married.

CASE 3.—R. V., a man aged 21, admitted to the hospital Dec. 3, 1933, was in his usual state of good health until June 1931, when he commenced to lose his appetite. Desire for food gradually decreased and was associated with progressive loss of weight and a feeling of fatigue. There were no other complaints apart from an occasional sensation of nausea. During the interval of two and a half years from the onset, his weight decreased from 153 pounds (69 Kg.) to 108 pounds (49 Kg.). The patient was not inclined to discuss his condition in detail and did not appear greatly concerned about it. He explained that he had often tried to eat larger quantities of food but had found that whenever he took more than a small amount he was troubled with epigastric fulness and nausea.

The patient was well developed but extremely emaciated and was in no apparent discomfort. His height was 5 feet 9 inches (175 cm.) and weight 101 pounds (46 Kg.). Hair distribution and secondary sex characteristics were normal for his age. The blood pressure was 95 systolic, 58 diastolic, the basal metabolic rate —25 per cent. His sugar tolerance curve was low and flat (table 1). There was no anemia. The pulse rate was from 64 to 85 per minute, the temperature from 97 to 98.6 F.

He had a good mentality; memory, perception and attention were not impaired. He was not depressed and appeared

anxious to regain his health. Enquiry showed that he had always tended to be seclusive but, although he did not make friends easily, he never had difficulty in getting along with people. His parents and an older brother lived on a small farm. Two years previously the patient had been sent to a neighboring city to find work but he had not been successful. He made few friends and became dissatisfied with the idle life he was leading. He wished to return to the farm but his parents would not agree. The patient became worried about their attitude and jealous of his brother. It was at this time that he commenced to suffer from indigestion after meals, which consisted mainly of a feeling of fulness, and to get relief he gradually cut down on his food intake. He stated that prior to his illness he ate very large meals and frequently ate between meals. To this excess he attributed the gastric disturbances which resulted in his present illness. He stated that there had been no loss of appetite but that he had a constant fear of the discomfort which invariably followed eating even a moderate quantity of food.

He was referred to the hospital as having Simmonds' disease. Because of the lack of evidence of gross endocrine dysfunction and the presence of an obvious psychologic disorder, the extreme emaciation was believed to be due to anorexia nervosa.

The patient was assured that there was no organic disease and the nature of his symptoms was explained to him. A duodenal tube was passed and left in situ for thirteen weeks. Eight concentrated feedings of 260 calories each were administered at intervals of two hours daily. After his fear had been allayed that the stomach might be abnormally stretched, he showed steady improvement. In about two weeks' time he was encouraged to take nourishment by mouth as well as by tube. With the increase in food intake an irregular low grade fever developed and persisted for about two months.

TABLE 1.—*Outline of Eight Cases*

| Case | Sex | Date | Age, Yrs. | Height | Weight, Lbs. | B. M. R. % | B. P. | Dextrose Tolerance Test, Mg. per 100 Cc. Fast. | ½ Hr. | 1 Hr. | 2 Hr. | 3 Hr. | Menses | Comment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Case 1 | | 1932 | | | | | | | | | | | | |
| E. L. | ♀ | Feb. 12 | 15 | 4'6" | 59 | —37 | 82/50 | 69 | 93 | 171 | 178 | 165 | Absent 5 mos. | Mentally bright; state of marked anxiety with hypochondriacal trend |
| | | Feb. 20 | .. | ..... | .. | .... | ..... | 71 | 82 | 80 | 64 | 61 | | |
| | | April | .. | ..... | 73 | —16 | 102/52 | | | | | | | |
| | | 1933 | | | | | | | | | | | | |
| | | November | .. | ..... | .. | .... | ..... | ... | ... | ... | ... | ... | Returned | Mentally and emotionally stable |
| | | 1934 | | | | | | | | | | | | |
| | | January | .. | 4'8" | 86 | — 5 | 112/76 | | | | | | | |
| | | 1938 | | | | | | | | | | | | |
| | | February | 21 | 4'8¼" | 99½ | .... | 122/84 | ... | ... | ... | ... | ... | Regular since Nov., 1933 | Working steadily; feels and looks well |
| Case 2 | | 1933 | | | | | | | | | | | | |
| D. K. | ♀ | May | 18 | 5'4" | 91 | .... | 98/70 | ... | ... | ... | ... | ... | Menstruated once in 8 mos. | Intellectual; sensitive and apprehensive |
| | | June | .. | ..... | 88 | | | | | | | | | |
| | | 1934 | | | | | | | | | | | | |
| | | August | .. | ..... | 72 | —25 | ..... | ... | ... | ... | ... | ... | Returned Dec. 1934; regular thereafter | |
| | | 1935 | | | | | | | | | | | | |
| | | January | 20 | ..... | 100 | | | | | | | | | |
| Case 3 | | 1933 | | | | | | | | | | | | |
| R. V. | ♂ | December | 21 | 5'0" | 101 | —25 | 95/58 | 80 | 97 | 104 | 67 | 64 | ..... | Quiet and seclusive |
| | | 1934 | | | | | | | | | | | | |
| | | March | .. | ..... | 131 | —10 | 100/60 | 110 | 114 | 143 | 102 | 80 | ..... | Interested and sociable |
| | | July | .. | ..... | 140 | .... | ..... | ... | ... | ... | ... | ... | ..... | Able to work |
| Case 4 | | 1934 | | | | | | | | | | | | |
| D. G. | ♂ | Jan. 31 | 13 | 5'4" | 75 | —45 | 108/70 | 76 | 100 | 103 | 120 | 91 | ..... | Variability of mood; suspicious; obsessed regarding food |
| | | Feb. 8 | .. | ..... | 78 | —35 | | | | | | | | |
| | | Feb. 17 | .. | ..... | 92 | —27 | | | | | | | | |
| | | March 31 | .. | ..... | 94 | —29 | ..... | 75 | 67 | 108 | 90 | 89 | | |
| | | 1938 | | | | | | | | | | | | |
| | | April | 17 | 5'11" | 159 | — 8 | ..... | ... | ... | ... | ... | ... | ..... | Feeling well; happy; attends school regularly |
| Case 5 | | 1934 | | | | | | | | | | | | |
| M. A. | ♀ | Sept. 27 | 16 | 5'5" | 91 | —28 | 95/60 | 68 | 132 | 181 | 207 | 220 | Absent for 18 months | Intellectual, introspective and seclusive |
| | | Oct. 6 | .. | ..... | .. | .... | ..... | 68 | 131 | 156 | 130 | 142 | | |
| | | November | .. | ..... | 102½ | —28 | | | | | | | | |
| | | 1936 | | | | | | | | | | | | |
| | | May | .. | 5'5⅝" | 130 | —17 | ..... | ... | ... | ... | ... | ... | Returned early in 1936 | |
| | | 1938 | | | | | | | | | | | | |
| | | May | 20 | 5'5¾" | 139 | —17 | 104/68 | 83 | 91 | 71 | 87 | 92 | Regular since returning | Nervous and easily upset; attending university; working hard |
| Case 6 | | 1935 | | | | | | | | | | | | |
| I. A. | ♀ | November | 23 | 5'1½" | 69 | —32 | 74/56 | 54 | 92 | 80 | 102 | 104 | Absent for 7 years | Suspicious; uncooperative |
| | | 1938 | | | | | | | | | | | | |
| | | May | 27 | ..... | 125 | .... | ..... | ... | ... | ... | ... | ... | Still absent | Working: domestic |
| Case 7 | | 1936 | | | | | | | | | | | | |
| R. P. | ♀ | March | 21 | 5'5" | 77 | —26 | 104/70 | 82 | 114 | 118 | 93 | 88 | Absent for 2 yr. | Variability of mood |
| | | April | .. | ..... | 81 | .... | ..... | ... | ... | ... | ... | ... | ..... | Emotionally unstable |
| | | 1938 | | | | | | | | | | | | |
| | | May | .. | ..... | 110 | .... | ..... | ... | ... | ... | ... | ... | Still absent | More stable; feels well |
| Case 8 | | 1937 | | | | | | | | | | | | |
| A. S. | ♀ | February | 23 | 5'3⅝" | 69¾ | —18 | 80/58 | 134 | 148 | ... | ... | 124 | Absent for 5 mos.; only 3 periods previous year | Intelligent; introspective; wilful; sensitive; refuses to cooperate |
| | | 1938 | | | | | | | | | | | | |
| | | May | 24 | ..... | 59 | .... | 112/60 | ... | ... | ... | ... | ... | Still absent | |

Eight weeks after admission, his weight was 113½ pounds (51.5 Kg.), the basal metabolic rate —29 per cent. The patient stated that he felt much stronger and eagerly anticipated his meals. He was more talkative than on admission and was frequently seen chatting with the other patients in the ward. The dextrose tolerance curve had become more normal (table 1). When the duodenal tube was withdrawn the patient was eating a diet of 3,000 calories daily. His weight was 128 pounds (58 Kg.) and the basal metabolic rate was —6 per cent.

On discharge from the hospital, March 30, 1934, his weight was 131 pounds (59 Kg.), the basal metabolic rate —10 per cent. Mentally much improved, he regarded the future with optimism and was completely reassured regarding his digestive

disturbances. Information received July 25, 1934, indicated that he was well, weighed 140 pounds (63.5 Kg.) and was working happily on the farm.

CASE 4.—D. G., a boy aged 13, admitted to the hospital Jan. 24, 1934, was brought to the hospital by his parents because of loss of weight and a peculiar mental attitude toward food. He had developed normally until the spring of 1933, at which time he was a little heavier than most of his play fellows. The other boys called him "Tubby" and "Fat," which annoyed him greatly and resulted in several fist fights. He informed his parents that he was dieting to reduce weight. From that time on he took an abnormal interest in food. He talked about it constantly, with particular reference to the fat-producing ingredients of various dishes, and secretly took a "patent medicine" to aid in reducing. He would slip food into a paper bag between his knees during meals and afterward burn it in the furnace. It was noted that he would wipe the butter off his bread and put it on the under surface of the seat of his chair. Over the period of a year his weight decreased from 115 pounds (52 Kg.) to 79 pounds (36 Kg.). His parents stated that during this time he had become suspicious of people and would sneak around the house listening to conversations on the assumption that people were talking about him. He had become greatly interested in music, which previously had not interested him at all. His aunt stated that the boy would go into the woods alone and pray to become thin, and that he had expressed an idea that his bedroom was holy.

TABLE 2.—*Effect of Administration of Desiccated Thyroid in Case 5*

| Date | Basal Metabolic Rate, % | Thyroid Medication |
|---|---|---|
| Sept. 6, 1934..... | —37 | Desiccated thyroid, 1 gr. daily, Sept. 1933 to Sept. 24, 1934 |
| Sept. 28, 1934..... | —28 | Receiving no thyroid |
| Nov. 5, 1934..... | —28 | Receiving no thyroid |
| Jan. 5, 1935..... | —30 | Desiccated thyroid, 1 gr. daily, Nov. 11, 1934 to March 1936 |
| Jan. 26, 1935..... | —34 | |
| May 6, 1936..... | —17 | Receiving no thyroid |
| Mar. 17, 1938..... | —17 | Receiving no thyroid |

Prior to his illness he had been healthy and strong, living happily with his parents and one older sister. He had done moderately well at school but preferred to stay at home and occupy himself with mechanical toys rather than play games with the other boys. His outside doctor had found his basal metabolic rate to be —39 per cent and for sixteen days prior to admission the patient had been receiving 1 grain (0.065 Gm.) of desiccated thyroid daily but had shown no improvement.

The patient was extremely emaciated; his height was 5 feet 4 inches (163 cm.), his weight 74¼ pounds (34 Kg.). The secondary sex characteristics were normally developed for the age of the patient. There was no anemia. The basal metabolic rate was —45 per cent, the blood pressure 108 systolic, 70 diastolic, the pulse rate from 60 to 90 per minute, the temperature from 97 to 100 F. The sugar tolerance curve tended to be rather low (table 1).

It was ascertained that the father was an emotionally stable person with a good deal of understanding but that the mother was a highly strung, overly conscientious person who failed to take the boy's point of view into consideration and was constantly correcting him and endeavoring to make him conform to her standards. The patient had always been considered a nervous child, subject to impulses and full of short-lived enthusiasm for various interests. About two years previously his family moved to their present home in a different part of the city and, as the patient found difficulty in making friends in his new environment, he spent much time by himself. He stated that at first he intended to stop dieting when his weight fell to 100 pounds (45 Kg.) but that he found it impossible to do so. He admitted being influenced by the thought that if he lost much weight and became very thin he would attract a great deal of attention. As a result, he made a study of food values and stated that he became angry and suspicious of people who tried to persuade him to eat the regular meals. In conversation he appeared to be bright and alert; memory, perception and attention showed no defects. He stated that the family, particularly his mother and sister, were against him and that they were ignoring him and leaving him at home rather than taking him to shows and other places of amusement. He had arrived at the conclusion that there was not much in life worth living for.

During his stay in the hospital the nature of the condition was explained to the boy and he rapidly accepted the fact that there was need for a greater food intake, but he went to the extreme and ate huge quantities of food, so that he vomited at times. His weight showed a progressive increase; twenty-four days after admission it had risen to 92 pounds (42 Kg.). The basal metabolic rate was then —27 per cent. With the greater intake of food there was a low-grade fever ranging up to 100 F., lasting three weeks. During the next five weeks the intake of food was more moderate and there was but little change in weight. On discharge from the hospital, nine weeks after admission, his weight was 94 pounds (43 Kg.) and his basal metabolic rate —29 per cent. It was arranged that he should be sent to a boarding school to get him away from the home environment. Improvement was uninterrupted and the patient did well at school, mixing with the other boys and showing no return of his former symptoms.

The diagnosis was between schizophrenia and anorexia nervosa. It was felt that the latter diagnosis was the more likely in view of the rapid response to treatment in the hospital away from the home environment.

The patient was seen April 11, 1938. He was feeling well and seemed active and happy. His height was 5 feet 11 inches (180 cm.), his weight 159 pounds (72 Kg.), the basal metabolic rate —8 per cent. He was then 17 years of age and normally developed.

CASE 5.—M. A., a girl aged 16, was admitted to the hospital Sept. 24, 1934, complaining of amenorrhea of eighteen months' duration. Menstruation had commenced at the age of 11 and had been essentially normal until twenty months previously, when, after being scanty for two successive periods, it ceased entirely. She said that she felt well but that her appetite had been poor and that she had suffered from constipation for several years. She had been taking 1 grain (0.065 Gm.) of desiccated thyroid daily for one year.

The patient was emaciated; her height was 5 feet 5 inches (165 cm.), weight 91 pounds (41 Kg.), blood pressure systolic 95, diastolic 60, basal metabolic rate —28 per cent, pulse rate from 45 to 70 per minute, temperature from 96 to 98 F. The dextrose tolerance curve rose from an initial low level of 68 mg. to a peak of 220 mg., reached at the end of three hours (table 1). Repeated a few days later, the curve was lower (table 1). A barium sulfate enema showed tonus and haustration of the colon lacking to a moderate degree throughout. There was no anemia but the white blood count was 2,400, lymphocytes 31 per cent.

It was ascertained on enquiry that the patient weighed 135 pounds (61 Kg.) at the age of 11 and became very self conscious about her weight. The other children called her "Fatty," which annoyed her and evidently provided a basis for her curtailment of food intake since that time. She had always been very intelligent but inclined to fantasy. From the age of 4 she would occupy her time writing poetry, sketching and reading. She was always at the head of her class at school. She admitted day-dreaming a great deal since the age of eleven and preferred solitude to the company of others. She stated that people annoyed her and that she found talking an effort. At various times she tried to increase her food intake, but this would result in a bloated feeling in the abdomen, which she attributed to constipation. Enquiry revealed that the constipation was associated with faulty habits and that she was relying on frequent laxatives. The patient stated that her home life was a happy one except for the attitude of her older sister, who was continually taunting her, making reference to the desirability of having a good figure and with this in view making a study of food values and diets. The sister was not fat and the patient thought her unreasonable to diet. The patient

said that she had become acutely conscious of what other people ate. It would worry her when thin people left food on their plates or when obese people ate large amounts. This became an obsession with her.

The diagnosis was anorexia nervosa.

While in the hospital she usually was optimistic and cheerful. She spent her time reading books on philosophy and doing fancy work. Constipation was quickly relieved by instruction in proper habits and administration of liquid petrolatum. She was given a diet of 2,500 calories daily with 10 units of insulin one-half hour before the midday and evening meals. No thyroid was administered while she was in the hospital. Soon she took most of the food offered and on discharge was taking approximately 2,300 calories a day. Her weight increased gradually to 102½ pounds (46.5 Kg.) over a period of eight weeks and her mental attitude steadily improved.

Following discharge from the hospital Nov. 10, 1934, she resumed thyroid therapy and took 1 grain (0.065 Gm.) of desiccated thyroid daily until March 1936. The failure of this treatment to affect the basal metabolic rate materially is shown in table 2. Seen in December 1935, she was in good spirits, eating well and weighed 119 pounds (54 Kg.), but the menses had not yet returned. In May 1936 she weighed 150 pounds (68 Kg.), having gained 24 pounds (11 Kg.) in two months. Thyroid had been discontinued five weeks previously. The basal metabolic rate was now —17 per cent, the temperature 97.6 F., the pulse rate 54 per minute. The menses returned at this time and have continued normally ever since.

At present (May 1938) she feels well but is inclined to be nervous and easily upset. She is attending the university, working hard and doing well in her studies. Her height is now 5 feet 5¾ inches (165 cm.), weight 139 pounds (63 Kg.), basal metabolic rate —17 per cent, blood pressure 104 systolic, 68 diastolic.

CASE 6.—I. A., a woman aged 25, admitted to the hospital Nov. 22, 1935, complained of loss of weight, strength and energy, with increasing fatigue during the previous year. For several months she had noted swelling of the lower extremities and abdomen and frequency of micturition, latterly associated with thirst. She had not menstruated since 17 years of age, at which time she weighed 102 pounds (46 Kg.), her greatest weight. She had always been a small eater and disliked many foods, which included those of high caloric value. Because of attacks of frequency of micturition her physician had placed her on a markedly restricted diet, to which she attributed the rapid loss of weight.

Her home conditions were bad, her family being on relief. She lived alone with a semi-invalid mother, her father and a sister having died in recent years. The patient did all the housework.

The patient was extremely emaciated and pale; her weight was 69 pounds (31 Kg.), her height 5 feet 1½ inches (155 cm.). The secondary sexual characteristics were normally developed; head and body hair were abundant. There was edema of the feet, legs and thighs, and slight puffiness around the eyes. The hair and skin were dry. The temperature was from 96 to 99.7 F., heart rate from 70 to 90 per minute, blood pressure 74 systolic, 56 diastolic, hemoglobin 52 per cent, red blood count 3,000,000, white blood count 2,600. The twenty-four hour output of urine was approximately 500 cc. daily, with specific gravity relatively fixed between 1.010 and 1.1014. Albumin was present occasionally in small quantities. The nonprotein nitrogen was 35 mg. per hundred cubic centimeters of blood, serum protein 3.5 per cent, the basal metabolic rate —32 per cent. The sugar tolerance curve was low and tended to be flat (table 1). Electrocardiogram, voltage 6 mm.

The diagnosis was anorexia nervosa. It was believed that the edema and anemia were secondary to prolonged malnutrition.

During the one week the patient remained in the hospital she was uncooperative, refusing to eat an adequate amount of food, and was resentful and complaining in her attitude toward her attendants and visitors. Finally she went home against advice. On readmission a few weeks later the edema was more marked and the mental attitude worse. Her weight was 75 pounds (34 Kg.), the increase believed to be due to edema. The serum protein was 4.5 per cent. The average caloric intake for one week was about 1,100 calories a day. Again she went home against advice.

At present (May 1938) she is working as a domestic outside the city. Her mother believes that she is well. Her weight is now 125 pounds (57 Kg.). The menses are still absent.

CASE 7.—R. P., a woman aged 21, admitted to the Psychiatric Hospital March 31, 1936, complained that she could not eat, was tired all the time, and that she cried a great deal. She stated that at about 8 years of age she commenced to become stout. At 13 years she weighed 160 pounds (73 Kg.). Menstruation commenced at this time and was associated with considerable pain. The periods had never been very regular and stopped completely two years before admission. She became very conscious of her stoutness, especially of her large abdomen. Everybody teased her and called her "Fat." She had previously enjoyed swimming but about this time she noticed that her limbs felt numb and weak. She commenced to diet and from then onward lost weight. At the age of 16 she weighed 130 pounds (59 Kg.) but people continued to tease her. At 17 years of age she became nervously upset because of fear that she might fail in her matriculation examinations. Since that time she had been subject to nervous symptoms and had existed in a state of mild chronic ill health. About one year before admission to the hospital she commenced to cut down her food intake to a marked degree. She lost weight rapidly and became increasingly easily fatigued. Little things at home bothered her and she lost all interest in reading and knitting, which she had enjoyed formerly.

Examination was essentially negative, apart from the marked generalized emaciation. Secondary sexual characteristics were normally developed. Her weight on admission to the hospital was 77 pounds (35 Kg.), her height 5 feet 5 inches (165 cm.), the basal metabolic rate —26 per cent. The sugar tolerance curve was flat (table 1).

During her stay in the hospital the patient showed considerable variability in mood, at times displaying great apprehension and tearfulness and at other times being interested and cheerful. It was ascertained that there was a family background of religious fervor and that the mother was an emotionally unstable type of person and overly solicitous about the patient.

The diagnosis was anorexia nervosa.

The nature of her condition was explained to the patient and she was encouraged to eat an adequate diet. She cooperated well in this regard and engaged actively in occupational therapy. By April 14 her weight had increased to 81 pounds (37 Kg.). She was feeling much better and showed a decided improvement mentally. She was bright, enthusiastic and interested in her progress. However, she was anxious to leave the hospital and was discharged April 18 to go and stay with her sister-in-law. Information received May 1, 1936, indicated that the patient adjusted herself well after leaving the hospital and was eating fairly adequate meals. The improvement continued and in June 1938 it was ascertained that she was well and happy. She has been working for two months as a dress designer. She is well developed physically, weighs 110 pounds (50 Kg.) and is still gaining weight. The menses have not yet returned.

CASE 8.—S. A., an active alert, highly sensitive, wilful girl of 23, an only child, had fairly good health prior to 1934, at which time she weighed 112 pounds (51 Kg.). Rather unhappy at the university, she gradually lost to a weight of 94 pounds (43 Kg.) by the spring of 1936. She stated that during the preceding year the mistress of her boarding house had spread malicious tales about her carelessness of her health and refusal to eat. She felt this very keenly. Her appetite became worse and she began to vomit after eating without any associated nausea or discomfort. Her weight fell to 69 pounds (31 Kg.) by February 1937. The menses occurred three times in the year 1935-1936. She has not menstruated since September 1936.

In February 1937 she was emaciated, active, alert and intelligent and stated that she felt well. The secondary sexual characteristics were normally developed. The blood pressure was 80 systolic, 58 diastolic, the basal metabolic rate —18 per cent, the fasting blood sugar 134 mg. per hundred cubic centimeters; the sugar tolerance curve was incomplete but appeared to be flat (table 1).

The diagnosis was anorexia nervosa.

The patient refused to come into the hospital. She went home, where she was unhappy, tried numerous types of therapy and is now worse than ever. Her own physician reports her weight to be 59 pounds (27 Kg.), her blood pressure 112 systolic, 60 diastolic. He states that, though she claims to be feeling better, she is extremely emaciated and looks sick. She refuses to come to Toronto, fearing that she may be kept in the hospital.

COMMENT

It would appear that anorexia nervosa occurs almost entirely in people of psychoneurotic constitution. Most of them are intelligent, some to a marked degree; all are highly sensitive. Usually they are impulsive, wilful, introspective and emotionally unstable, but these qualities may not be very obvious. Associated with a sense of inferiority, they have a strong desire for prominence and dominance. Usually they are alert and optimistic but are resentful of control on the part of their family. Prior to the onset of anorexia they are often good mixers but with its development they frequently become seclusive. In only two cases did we obtain a history of a psychotic trend dating from childhood.

In persons with such a temperament as a basis, prolonged emotional disturbance may precipitate the development of this peculiar syndrome, which appears most commonly in the unstable period of adolescence and early adult life. In most of our cases there was an underlying discontent as the result of a failure of adaptation to the domestic situation. In four patients (2, 4, 5 and 7) the taunts of companions about a conspicuous obesity led to a psychologic repugnance for food which became a fixed habit. In others (cases 1 and 3) a morbid concern about minor symptoms referable to the gastrointestinal tract gave rise to a fixed fear of eating. In none did an acute emotional crisis precipitate the onset of symptoms. In only one case (case 6) was there a suggestion that therapeutic dietary restriction was a factor in the development of the condition. The other seven cases were definitely of the primary type. In none of our cases did we find evidence of any organic disease which might have been responsible for the symptoms.

The anorexia was peculiar in that it was not a simple want of desire for food such as is characteristic of wasting diseases but rather a morbid aversion to eating. It might be based on an abnormal desire to become thin, a desire to attract attention or gain sympathy, or a fixed belief in the inability of the stomach to hold any quantity of food (case 3) or a fear that ingestion of food would cause distressing symptoms. After a time this morbid anorexia became the habitual anorexia of undernutrition and starvation. It is evident that the morbid anorexia is a manifestation of an underlying psychologic disorder. It should not be attributed to a secondary disturbance in function of the anterior lobe of the hypophysis or any other endocrine gland.

*Amenorrhea.*—In the six female patients, as well as in many others reported in the literature, amenorrhea was an early symptom. It was present usually before the anorexia became marked and always before emaciation was extreme. In four of our cases the menses returned when improvement in nutrition and sense of well-being became well established. Neither of the other two patients cooperated but one has improved definitely in other respects, the other not at all. In no case was amenorrhea associated with loss of secondary sexual characteristics; the breasts remained wonderfully well developed, and axillary and pubic hair persisted in all. In reporting his fatal case, Lockhart [6] emphasized the fact that the breasts alone were not involved in the extreme generalized wasting. Libido is not grossly disturbed, although the state of chronic ill health may temporarily depress it. There is no atrophy of the external genitalia nor, as far as could be determined from examination, was there atrophy of other sexual organs.

It is generally recognized that change of environment and emotional disturbance may give rise to amenorrhea in apparently healthy young girls. Similarly, amenorrhea may be associated with many illnesses and with undernutrition [4] in the absence of any demonstrable endocrine lesion. In some females the cycle appears to be easily interrupted, but little is known about the mechanisms by which this disturbance is brought about. When there is no other evidence of sexual dysfunction, it seems unreasonable to attribute the amenorrhea of anorexia nervosa to a gross disturbance in function of the adenohypophysis.

*Low Basal Metabolism.*—In anorexia nervosa the basal metabolic rate is usually reduced, sometimes to very low levels. The reduction may be more apparent than real because of the inadequacy of normal standards for emaciated adolescents. The lowering of the basal rate is comparable to that observed in undernutrition from other causes and would appear to be secondary to the emaciation. In Simmonds' disease, on the other hand, the lowered rate, although aggravated by emaciation, is primarily the result of the underfunctioning of the thyroid gland secondary to pituitary insufficiency and, accordingly, it rises in response to thyroid therapy. In anorexia nervosa the basal metabolic rate rises toward normal with the improvement in nutrition, although not necessarily parallel to the gain in weight. It is notable that in two of our patients (4 and 5) treated with desiccated thyroid 1 grain (0.065 Gm.) daily there was no obvious effect on the basal metabolic rate and no improvement in their general condition (see table 2).

*Blood Sugar Level.*—The blood sugar tolerance curves obtained in seven of the eight cases tended to be of two different types. Beginning at a relatively low fasting level, the curve might rise gradually to a peak between 170 and 220 mg. per hundred cubic centimeters at the end of two or three hours, failing to fall to the fasting level, i. e., the type of curve seen in healthy patients who have been starved or given a high fat diet for a few days; [7] or it might be low and flat, as seen in healthy people who have been on a high carbohydrate diet or in some patient with chronic undernutrition,[4] e. g. nontropical sprue. The two types might be seen in the same patient within a short time. Since it was not possible to control the many factors that may alter the dextrose tolerance, it seems wiser not to attach too great significance to variation in the curve. The fasting blood sugar was below 68 mg. per hundred cubic centimeters only once: patient 5 suffered from prolonged undernutrition with low serum protein and some generalized edema. Other fasting blood sugar readings in her case were 78, 59 and 69 mg. per hundred cubic centimeters of blood. It is noteworthy that, although the fasting blood sugar level tends to be low in anorexia nervosa, the fall is not to be compared with that frequently seen in Simmonds' disease, Addison's disease

6. Lockhart, S.: Case of Anorexia Nervosa: Necropsy, Lancet 1: 31, 1895.

7. Sweeney, J. S.: Dietary Factors That Influence the Dextrose Tolerance Test, Arch. Int. Med. 40: 818 (Dec.) 1927.

or hyperinsulinism, nor do the patients suffer symptoms of hypoglycemia. It would seem probable that the variations in carbohydrate metabolism are secondary to chronic undernutrition.[8]

### DIFFERENTIAL DIAGNOSIS

Patients suffering from wasting diseases such as tuberculosis or tumors of various kinds are usually quite ill, complain of weakness and fatigue and have obvious physical signs long before they reach the degree of emaciation seen in patients with anorexia nervosa. The latter patients are characteristically restless and active, even when emaciation is extreme, and commonly they will not admit being ill. Their alarmed relatives bring them to the physician but the patients protest that they feel well.

Addison's disease is usually differentiated with ease by the characteristic weakness, pigmentation, crises of nausea and vomiting, and low blood sodium. In both conditions the blood pressure may be low. In Addison's disease there is no related fundamental psychologic disturbance, the anorexia is not a constant feature, and often emaciation is a late symptom. In one instance, however, an erroneous diagnosis of anorexia nervosa was initially considered in an emaciated adolescent with pigmentation. This diagnosis was doubted because no adequate psychologic disturbance could be found to explain the anorexia and soon great fatigue and weakness with crises of nausea and vomiting pointed the way to a correct diagnosis of Addison's disease.

As a result of modern interest in the pituitary gland many cases presenting the picture of anorexia nervosa have been reported in the literature as cases of Simmonds' disease (extreme insufficiency of the anterior lobe of the pituitary gland). Superficially the syndromes closely resemble each other. In both, emaciation is a striking feature.[9] In both are found amenorrhea, lowered basal metabolic rate, altered sugar tolerance, low temperature and psychologic changes. On careful examination, one finds that the syndromes are fundamentally different.

Simmonds' disease occurs most commonly and most typically in adult women who have had several children and who have previously had ordinary good health. The disease usually begins in the puerperium after a difficult labor associated with sepsis, postpartum hemorrhage or some complication. It may occur also when the anterior lobe has been destroyed by tumor, granuloma or trauma. There is no underlying psychoneurotic constitution or any precipitating emotional cause. The syndrome of anorexia nervosa develops in adolescents and young adults and occasionally in older persons who have a psychoneurotic tendency. Precipitated by an emotional disturbance, it is cured by psychotherapy.

As already mentioned, the anorexia of anorexia nervosa is a morbid aversion to eating, whereas in Simmonds' disease there is loss of appetite unassociated with emotion. In both, emaciation develops and with emaciation comes the appearance of senility, which however tends to be more marked in Simmonds' disease. The amenorrhea of Simmonds' disease is associated with loss of sexual function, loss of secondary sexual characteristics, falling out of axillary and pubic hair, and atrophy of the sexual organs. It persists unchanged in spite of therapy. In anorexia nervosa, amenorrhea occurs as a single symptom, important chiefly because of the concern it gives the patient and the patient's relatives, and not associated with other evidences of failure of sexual function.

The basal metabolic rate in Simmonds' disease is usually lower than in anorexia nervosa. Being due largely to underfunction of the thyroid gland, it responds more readily to the administration of small doses of thyroid than does the lowered rate of anorexia nervosa, which is secondary to emaciation. The blood sugar in Simmonds' disease is lower than in anorexia nervosa, and attacks of spontaneous hypoglycemia are common. In Simmonds' disease there is almost always anemia of moderate severity, which is unusual in anorexia nervosa.

Most striking is the difference in mental status. In Simmonds' disease the patient is dull and apathetic and shows intellectual impairment and usually gross changes in personality. In anorexia nervosa the patient is generally quick, alert, restless and intelligent but may become wilful, sensitive, impulsive and hysterical. Only in rare cases with gross psychotic manifestations does the mental state in anorexia nervosa in any way resemble that of Simmonds' disease.

The characteristic pathologic change in Simmonds' disease is an almost complete destruction of the anterior lobe of the pituitary gland with secondary atrophic changes in other endocrine glands, viscera and skin. There are few reports of postmortem examination in cases of anorexia nervosa and the description of the endocrine glands in these is incomplete.[10] The available data suggest that there is no characteristic change in the endocrine glands. This opinion is supported by the unpublished detailed observations in a recent fatal case that has been brought to our attention. If anorexia nervosa were a "functional Simmonds' disease" there should be characteristic secondary changes in gonads and other endocrine glands.

The improvement in cases of anorexia nervosa, reported as such or as Simmonds' disease, has often been ascribed to the effect of administration of various endocrine preparations: insulin, thyroid, various female sex hormones and various pituitary preparations. Improvement occurring after pituitary therapy has often been taken as evidence of the correctness of the diagnosis of pituitary insufficiency (case 1). Actually the use of such preparations may be an effective, but not the most desirable, method of psychotherapy.

### TREATMENT

The aims of treatment are to change the attitude of the patient toward food so that emaciation will be relieved through the ingestion of an adequate diet and to insure permanent recovery by eradication of the underlying mental conflict. The former often can be attained by change of environment, encouragement and suggestion, but if the second objective is to be realized the psychologic basis must be discovered and remedied if possible. Prolonged psychotherapy is often necessary before the patient fully understands the true nature of his illness and especially the effect that various environmental factors, past and present, have had on its development. This understanding is essential if the patient is to become properly adjusted to those disturbing associations in his daily environment from which there is no escape.

8. Ross, C. W.: Anorexia Nervosa with Special Reference to the Carbohydrate Metabolism, Lancet **1**: 1041 (May 7) 1938. Sheldon, J. H., and Young, Frederick: On the Carbohydrate Metabolism in Anorexia Nervosa, ibid. **1**: 257 (Jan. 29) 1938.

9. It is true that emaciation may be lacking in Simmonds' disease, but this is exceptional.

10. Elliott, T. R.: Pathological Changes in the Adrenal Glands, Quart. J. Med. **8**: 47, 1914. Conybeare, J. J.: A Fatal Case of Anorexia Nervosa, Guy's Hosp. Rep. **80**: 30 (Jan.) 1930. Lockhart.[6]

On commencing treatment it is desirable that the patient be removed to a hospital away from overly solicitous relatives and friends. Treatment in the public ward is to be preferred, because contact with other patients suffering from various organic diseases has a salutary effect on most patients with anorexia nervosa and makes the reassurance they receive more gratifying and significant. The well ordered routine of a hospital, the optimism of doctors and nurses and the evidence of recovery around them all have therapeutic value which, combined with freedom from the stress of their former environment, often results in rapid and striking improvement. To obtain the best results from psychotherapy it is essential that it be preceded by a most careful and thorough investigation of the patient. This is important both for the confidence it gives to the physician and for the reassurance of the patient. The life history of the patient should be obtained, with particular emphasis on his emotional reactions to his associates. The factors at the basis of the neurosis are sometimes quickly revealed, but often cooperation is imperfect and it is necessary to persevere in the search by questioning the patient's relatives and friends. Discussion should be continued until the patient understands clearly the connection between the psychologic maladjustment and the development of his symptoms.

The patient should be reassured with the utmost confidence that no organic basis for the symptoms exists and he should receive an explanation of the relationship between emotional disturbances and the imbalance of the autonomic nervous system which may result. The manner in which the stomach adapts itself to gradual and persistent lessening of the food intake should be explained so that the patient's apprehension over the feelings of fulness which occur when he tries to increase his intake can be allayed.

The patient should be encouraged to eat, at frequent intervals, small but gradually increasing quantities of food of high caloric value. The caloric intake should be carefully calculated daily, and praise and encouragement given with each increase that occurs. When about 3,000 calories is being taken daily and gain in weight is evident, the frequency of the meals can be gradually lessened and the variety of food increased.

In some cases feeding by duodenal tube may be necessary in the early stages of treatment but usually the method outlined is all that is required. Insulin to stimulate the appetite should not be used except as a last resort. Similarly, nonspecific endocrine therapy should be avoided, because permanent results are more likely to be obtained if no artificial aids are employed.

During the patient's stay in the hospital every effort should be made to divert his thoughts from his obsession. The public ward is obviously more effective than a private room for this purpose. Occupational therapy is of great assistance, particularly if the hospital has a workshop available where skilful therapists may introduce a spirit of friendly competition with certain other patients in some work or game. By this means a feeling of achievement may be engendered which will go far to restore the confidence these patients need so badly and thus facilitate recovery.

SUMMARY

The eight cases of anorexia nervosa that we have reported present the typical syndrome of emaciation, amenorrhea, low basal metabolic rate, low blood pressure and often rather low fasting blood sugar values with flat sugar tolerance curve. Although the syndrome bears a superficial resemblance to that of Simmonds' disease, it is actually quite distinct and different.

The syndrome of anorexia nervosa develops as a result of an underlying mental conflict and appears usually in the unstable period of adolescence, most commonly in intelligent girls whose emotional constitution and autonomic nervous control are unstable.

These patients respond well to proper psychotherapy. If the cooperation of the patient and the family can be obtained, cures should be effected for all patients placed in a suitable environment with the exception of those who have serious mental disease.

There is no specific endocrine therapy for this condition, but these patients being of a hysterical nature will often respond temporarily to the suggestion that goes with confident administration of a special extract. Actually such treatment should be avoided because permanent results are more likely to be obtained if no artificial aids are employed.

100 College Street.

## *Clinical Notes, Suggestions and New Instruments*

### UNDULANT FEVER TREATED WITH SULFANILAMIDE

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Sulfanilamide was originally found successful in the treatment of infection produced by gram-positive organisms. It is also effective in controlling infections due to gram-negative bacteria.

Berger and Schnetz [1] used it in the management of brucellosis. Stern and Blake [2] report three cases in which cure resulted with the drug. They were apparently unaware of its previous use in brucellosis, since they gave no bibliography. Working independently, we had found it beneficial in two cases of undulant fever. Our report, submitted to THE JOURNAL in January 1938, was rejected and returned in April. Sulfanilamide was furnished to us by the Winthrop Chemical Company.

CASE 1.—H. K. worked in the stockyards as a truck driver, handling both raw pork and beef. He entered Cook County Hospital in April 1937. Before admission he had been sick three weeks with chills, fever, sweating, generalized aching and weakness. His temperature continued to fluctuate between 98 F. in the early morning and 103 F. in the afternoon in the hospital as it had at home. The leukocytes numbered 6,800. The spleen was palpable. The Widal reaction was negative. Cultures of the blood and urine gave negative results. On admission his serum agglutinated the bovine and porcine forms of Brucella melitensis through 1:320 on the slide and above 1:1,280 in the test tube.

Stock vaccines of the porcine and bovine forms of Brucella melitensis were given twice a week for three weeks without benefit. Three weeks later sulfanilamide was started. Twenty-four hours after he received eight tablets his afternoon temperature was lowered and after forty-eight hours it was normal and remained so. The sulfanilamide was stopped one week later. During his remaining stay of one month his temperature did not exceed normal. He regained strength and appetite. He has remained well.

CASE 2.—A woman aged 69 became ill in Florida with chilliness and fever but no rigors. Periods of fever, interrupted by intervals of normal temperature, continued for eight weeks. During this period her weight decreased from 125 pounds to 65 pounds (56.7 to 29.5 Kg.). She had wandering pains in the

1. Berger, W., and Schnetz, H.: Prontosil in Abortus Infections, Med. Klin. **33**: 594 (April 30) 1937.
2. Stern, R. L., and Blake, V. W.: Undulant Fever: Its Treatment with Sulfanilamide, J. A. M. A. **110**: 1550 (May 7) 1938.

joints. The hemoglobin content decreased to 50 per cent, the red blood cells to 2,500,000 and the leukocytes numbered 3,000. The sedimentation rate was rapid. Repeated searching yielded no plasmodia. There were no intestinal parasites. Brucella melitensis bovinum was isolated from the blood and her serum in a dilution of 1:15,000 rapidly agglutinated Brucella melitensis. At the end of eight weeks she was jaundiced and went into a stupor. She had a blood transfusion at this point, and 30 grains (2 Gm.) of sulfanilamide (prontylin) was given daily. Within forty-eight hours she was free of fever. She has remained afrebrile to this date, twelve months later.

Sulfanilamide effected prompt and apparently permanent cures in two patients with brucellosis.

629 South Wood Street—715 Lake Street.

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## TICK PARALYSIS DUE TO THE BITE OF THE AMERICAN DOG TICK

### REPORT OF A CASE OBSERVED IN GEORGIA

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Until recently little attention had been paid to a type of ascending paralysis of the flaccid type caused by the bite of certain ticks. The disease has been observed in children and in the young of animals, especially sheep and dogs. Adult human beings and mature animals are rarely afflicted.

The literature contains several excellent works on the condition from which the symptoms and the course of the disease in man can be studied.[1] Premonitory symptoms such as paresthesias, pain in the legs, dizziness, restlessness and general malaise may or may not be present. They may precede the paralysis by several days. The onset of the paralysis is characterized by its sudden appearance and rapid progress. Muscular weakness and asynergia appear first, followed in a few hours by more or less complete flaccid paralysis beginning in the lower extremities and extending upward, involving the arms and the neck. Speech and deglutition become difficult, the pupils dilate and in untreated cases death from respiratory paralysis supervenes.

The diagnosis is made from the clinical symptoms and the finding of an engorged female tick on the patient's body, most commonly on the scalp. Early removal of the tick is followed by rapid recovery, which is usually complete within three days. Failure to remove the tick or delayed removal leads in most if not all cases to a fatal termination.

Laboratory experiments[2] suggest that the disease is not caused by a living virus but by a venom which is elaborated in the developing ova of the impregnated female tick. Tick paralysis in children has been reported from Montana, Idaho, Washington, Oregon, Wyoming and British Columbia. Most cases occur in the spring and early part of the summer.

The tick responsible for all human cases reported in the United States and Canada is Dermacentor andersoni Stiles, the Rocky Mountain wood tick. This tick has attracted widespread attention as a vector of Rocky Mountain spotted fever, tularemia, relapsing fever and probably Colorado tick fever. Paralysis seems to occur only after the impregnated female tick has fed for several days on a patient. Detailed information on ticks and tick-borne diseases may be found in a recent article by Parker and his associates.[3] A similar disease in man caused by a different species of ticks, Ixodes holocyclus, has been reported from Australia.[4] Tick paralysis in sheep, caused by Ixodes pilosus Koch, has long been known in South Africa.[5] Recently cases of paralysis in young dogs following the bite of Dermacentor variabilis Say, the American dog tick, have been observed in the eastern section of the United States.[6] It is remarkable that ticks are common in many regions from which cases of tick paralysis have never been reported.[7]

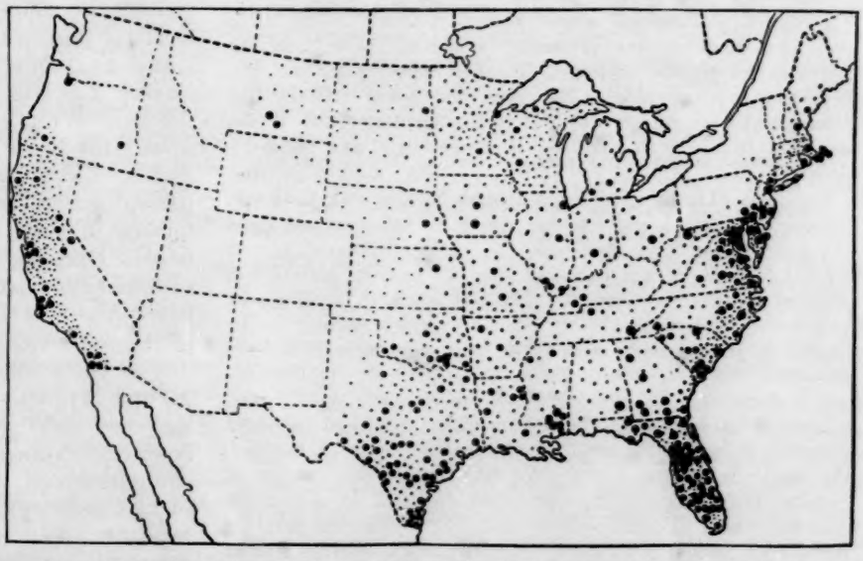
We are reporting this case of tick paralysis for two reasons: 1. This case was observed in Georgia. No cases east of Wyoming have been reported previously. 2. Recovery followed the removal of Dermacentor variabilis, a tick which has not been known to cause paralysis in children.

### REPORT OF CASE

A white girl aged 9 years of Hepzibah, Ga., was first seen in the emergency room of the University Hospital June 19, 1938, at noon. The mother related the following history: The birth and development of the child were normal. She had whooping cough at the age of 9 months and scarlet fever at the age of 7 years. The parents and four other children were in good health. One of the children had had infantile paralysis several years before.

During the past week the patient had been complaining of feeling weak. On awakening on the morning of admission she was unable to get out of bed and complained of pain in the left thigh. She was carried to the breakfast table. There it was noticed that the arms moved in an incoordinate manner. She was unable to feed herself, and her left hand dropped into a bowl of hot food. She sustained a burn on the wrist but did not seem to experience any pain.

On admission the child appeared acutely ill. The temperature was 100.6 F. There was flaccid paralysis of both legs with absence of the tendon reflexes. The arms were weak and showed marked asynergia. The biceps and triceps reflexes were present. There was no difficulty in swallowing but the speech was thick and drawling. The eyes showed marked lateral and vertical nystagmus. The pupils were normal in size and reacted promptly to light.



Distribution of Dermacentor variabilis in the United States. Large dots indicate localities where collections were made by the Bureau of Entomology and Plant Quarantine; small dots indicate the probable range. (Reproduced from Bishop and Smith.[6])

From the Department of Pediatrics, University of Georgia School of Medicine, and the University Hospital.

1. Temple, I. U.: M. Sentinel **20**: 509, 1912. Nuttall, G. H. F.: Parasitology **7**: 95, 1914. Todd, J. L.: Canad. M. A. J. **4**: 825, 1914; ibid. **9**: 994 (Nov.) 1919. Bishop, F. C., and King, W. V.: J. Econom. Entomol. **6**: 200, 1913. Hawden, S.: Parasitology **6**: 298, 1913. McCornack, P. D.: Paralysis in Children Due to the Bite of Wood Ticks, J. A. M. A. **77**: 260 (July 23) 1921. Barnett, E. J.: Wood Tick Paralysis in Children, ibid. **109**: 846 (Sept. 11) 1937.

2. Regendanz, P., and Reichenow, E.: Arch. f. Schiffs- u. Tropen.-Hyg. **35**: 255 (May) 1931.

3. Parker, R. R.; Philip, C. B.; Davis, G. E., and Cooley, R. A.: J. Econ. Entomol. **30**: 51, 1937.

4. Strickland, C.: Parasitology **7**: 379, 1914.

5. Borthwick: Vet. J., London **61**: 33, 1905 (cited from McCornack).

6. Bishop, F. C., and Smith, C. N.: Circular 478, U. S. Dept. of Agriculture, 1937.

7. Barnett.[1] Parker, Philip, Davis and Cooley.[3]

Poliomyelitis or poliencephalitis was suspected and a diagnostic spinal puncture was performed. Clear fluid was obtained under pressure of 10 mm. of mercury.

Examination of the spinal fluid showed cell count 3, negative Pandy and Ross-Jones tests, total protein 50 mg. per hundred cubic centimeters, colloidal gold test 0000000000, and the Wassermann and Kahn reactions were negative. Cultures yielded no growth.

Analysis of the blood revealed red blood cells 4,800,000, hemoglobin 82 per cent, white blood cells 8,400, differential count: polymorphonuclears 72 per cent, eosinophils 0, basophils 0, lymphocytes 28 per cent, monocytes 0.

Urinalysis showed albumin none, sugar none, acetone none; microscopic examination revealed from 15 to 20 white blood cells per low power field.

Examination of the stool gave negative results for blood, parasites and ova.

The Wassermann, the tuberculin and the Schick test all gave negative results.

Soon after admission two ticks were found attached to the scalp in the parietal region. One of these was markedly engorged. They were carefully removed. The presence of the ticks had not been noticed by the patient or her parents, although a large ecchymotic area was present at the point of attachment. The diagnosis of tick paralysis was now made and the further course of the illness seemed to justify the diagnosis.

The ticks were identified as Dermacentor variabilis Say.[8] The large engorged tick was a female, the smaller one a male.

At 6 p. m. the patient showed considerable improvement. The speech had become almost normal. Ataxia of the arms and legs was now the prominent symptom, while muscular strength had greatly improved. Further improvement was evident the next morning. The knee and ankle reflexes had returned and the patient was able to stand unsupported. Walking was still difficult and the Romberg sign was markedly positive.

On June 23 another tick was found on the scalp and was removed. This tick was a female which did not show any signs of engorgement. At this time the patient appeared almost normal. Recovery was complete June 24, and the patient was allowed to leave the hospital. The last symptom to disappear was some slight difficulty in walking, which seemed to be caused by ataxia rather than by muscular weakness.

### COMMENT

The clinical symptoms, the finding of the ticks and the rapid recovery following the removal of the ticks seem to establish the diagnosis beyond doubt. We believe that this case is of considerable interest. The American dog tick is a common parasite which is widely distributed in the eastern parts of the United States, as shown in the chart. It frequently attacks man.[6] Since the tick is known to cause paralysis in dogs, it is a priori probable that it can also cause paralysis in children. Similar cases may have occurred in other states but not been recognized, since the disease may easily be mistaken for other types of paralysis, poliomyelitis or poliencephalitis. The importance of diagnosing the condition is obvious since the outcome depends on the early removal of the ticks.

### SUMMARY AND CONCLUSIONS

1. A case of tick paralysis in a 9 year old girl was observed in Augusta, Ga. Rapid recovery followed the removal of a male and an engorged female dog tick.

2. Tick paralysis in a child caused by the American dog tick has not previously been reported.

3. The American dog tick is a common parasite in many parts of the United States. It is suspected that other cases have occurred which have been mistaken for infantile paralysis.

8. Dr. E. H. Ewing from the Division of Insect Identification, Department of Agriculture, Washington, D. C., and Dr. R. C. Dienst from this school identified the ticks, and Dr. E. C. Cushing, Department of Agriculture, and Dr. R. R. Parker, director, of the Rocky Mountain Laboratory, U. S. Public Health Service, Hamilton, Mont., contributed valuable information.

## *Special Clinical Article*

# MENTAL HYGIENE AS RELATED TO THE PSYCHONEUROSES

CLINICAL LECTURE AT SAN FRANCISCO SESSION

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Mental hygiene is now accepted not as a theory of human behavior, as erroneously referred to by many in the early days of its development, but as a movement, in a broad sense, for improving the care and treatment of the mentally ill, preventing mental disorder and preserving mental health. With these crystallized purposes it had its inception in this country in 1908 at the organization of the Connecticut Society for Mental Hygiene by Mr. Clifford W. Beers. In the following year Mr. Beers founded the National Committee for Mental Hygiene, of which he became the first secretary, which position he has held continuously up to the present time. Many are familiar with the colorful life of Mr. Beers and his outstanding achievement in having been able to enlist and hold the interest and support of numerous influential citizens of America, both lay and professional. Among the latter are such names as August Hoch, Frederic Peterson, Lewellys F. Barker, the late Drs. William H. Welch and William Alanson White, and perhaps the most prominent of those still living and actively interested, Dr. Adolph Meyer, the acknowledged dean of psychiatry of the present generation. These, along with many prominent laymen of large means and succeeding groups of professional people, have given either substantial amounts of money or technical counsel in the initiation and development of a movement which has grown into one of the most valuable agencies for human welfare.

The early interests of the National Committee for Mental Hygiene were centered on the improvement of the care and treatment of the mentally ill in public hospitals. Numerous surveys were made of the physical equipment and treatment facilities of such institutions in various states, and recommendations followed which brought about reforms of inestimable value. This influence gradually extended to private hospitals for the care of the mentally ill, with corresponding improvement of service in these hospitals. Then followed the development of agencies for the ostensible purpose of preventing mental disorders, both in the form of mobile clinics in connection with various state hospitals and in the establishment of psychologic and psychiatric examinations of children in public schools and the outpatient departments of general hospitals. Much of this early pioneer work had been accepted as valuable, and in order to help various communities achieve their purpose in a preventive program the Commonwealth Fund in 1922, under the guidance of the National Committee for Mental Hygiene, established demonstration child guidance clinics in seven of the largest cities. Within six years thereafter more than 500 mental hygiene clinics had been organized in this country, and on Jan. 1, 1936, according to the Directory of Psychiatric

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Clinics published by Dr. George S. Stevenson,[1] director of the Division on Community Clinics, there were in thirty-nine states 684 clinics of this type, supported either by private or by public funds, including those associated with medical schools and outpatient departments of general hospitals.

The emphasis, in the early days of child guidance clinics, was on the prevention of mental illness and delinquency, by personality studies and educational measures, in order to forestall later hospitalization or penalization. More recently there has been a shift of emphasis from the thought of future psychoses or criminal careers to the need of psychiatric attention for the child's own sake, in an effort to enhance his feeling of security and to obtain for him a better social adjustment. In line with this later and present day trend, attention is quite naturally directed to that tenet of the mental hygiene movement which embraces one of its most practical phases, the preservation of mental health. While the prevention of mental illness and the preservation of mental health may appear, on the surface, to be synonymous, one can never know just how much has been accomplished by so-called methods of prevention, owing to the belief that there are so many obscure and deep seated forces at play which may act as predisposing factors in the production of mental illness, especially the major forms of maladjustment, usually designated as psychoses. I have in mind, particularly, the inescapable influences of heredity and constitutional predisposition which affect the lives of all persons in their mental and emotional adjustments and which have been transmitted not solely from the immediate ancestors but from those of many preceding generations. The total personality makeup may therefore be thought of not only as that which has been built up and organized in the process of development of the individual but as an outgrowth of his historical past, as well.

When we come to the precipitating circumstances of mental illness, nearly all psychiatrists are in agreement that their concepts are somewhat more tenable. Herein lies their greater hope, by the improvement of methods of diagnosis and the application of special skills in treatment to the degree that, in at least a fair but unknown percentage of cases, major psychotic manifestations may be actually forestalled. These are worth while and laudable concepts and constitute a goal toward which all of us strive. They are the foundations of much of the mental hygiene movement.

## THE PSYCHONEUROSES

Thus far I have discussed in a general way some of the broader purposes of the mental hygiene movement and now come to that phase of the subject more specifically related to the title announced; namely, a consideration of the psychoneuroses. For purposes of convenience and relative simplicity, a psychoneurosis may be defined as a condition in which an individual reacts to an unhappy or threatening situation by a group of symptoms which have an instinctive basis and which are manifested in the form of various escape and defense reactions distinctly different from those of the general population who are, at least for the time being, sufficiently integrated in their personality makeup that they can face similar situations more frankly than one suffering from a psychoneurosis is capable of doing. The one has a tendency to regress to a primitive or infantile type of behavior, governed by an instinctive drive, and the other to act on a more rational basis. The former does not, however, have a type of behavior that is incompatible with sanity and responsibility, and such an individual is usually in sufficient contact with reality that he is thought of by his associates as being essentially normal.

In most textbooks on psychiatry there is a tendency to include all neuroses and psychoneuroses under the general classification of the latter, whereas those who have approached a study of these borderline states of maladjustment from the psychoanalytic point of view have designated the neuroses as the more inclusive term. Their classification has been favorably received by many psychiatrists and neurologists who have endeavored to obtain a better understanding of the origin of the mental mechanisms that underlie the symptom formation in this large group of cases, although many of them, as well as myself, have not attempted to use formal psychoanalysis as a therapeutic procedure. Wechsler,[2] who has compressed the principles of the latter classification into a few simple paragraphs, makes the following statement:

> Freud divides the neuroses into Actual Neuroses and Psychoneuroses. By the former he means those neuroses in which, aside from the immediate or precipitating psychologic factor, there is actual, even if temporary, physical disturbance within the organism. In this group he includes anxiety neurosis, neurasthenia and hypochondria. Traumatic neurosis may possibly be added. By psychoneuroses he understands those neuroses which illustrate the various stages of regression to infantile points of fixation. The whole group is, therefore, known as Regression or Fixation Neuroses. Under this head are classed the Transference Neuroses, which include conversion hysteria, anxiety hysteria and compulsion neurosis.

It is furthermore stated that in the present state of our knowledge it is impossible to make a rigid classification on account of the difficulty of defining what is normal and that clinical observation reveals that mixed neuroses are extremely common. One does not always see pure anxiety or conversion hysteria, pure anxiety neuroses, pure compulsions and the like but conditions in which there is a little of each. Elaborating a step further, it is noted that the same mental processes are observed in the socially well adapted person as in the maladjusted neurotic. It can therefore be agreed that every normal person is a little neurotic and that every neurotic person is very much normal. It is only in the degree of variation in the conduct of individuals under similar social and other environmental influences that the need of investigating the motivation of psychobiologic processes may arise to account for what might be looked on, in a particular person, as neurotic behavior.

## UNDERLYING FACTORS

Much knowledge regarding the underlying factors of neurotic behavior has been gained from the study of primitive people and children and from the behavior of animals. In fact, reactions of escape and defense are observed in the lower forms of animal life, striking examples of which are related by Ernst Kretschmer[3] of Marburg in his discussion of hysteria, as follows:

> If a swimming infusorian approaches a zone of heated water, it reacts with an overproduction of lively motions which continue until one of them takes it away from the dangerous area,

1. Stevenson, G. S.: Directory of Psychiatry Clinics in the United States, 1936, Ment. Hyg. **20**: 66 (Jan.) 1936.

2. Wechsler, I. S.: Clinical Neurology, Philadelphia, W. B. Saunders Company, 1928.

3. Kretschmer, Ernst: Hysteria, Monograph 44, Washington, D. C., Nervous & Mental Disease Publishing Co., 1926.

whereupon it quietly swims away. If a bee or a bird is caught in a room, it will neither sit in one corner and deliberate, nor will it methodically examine the doors and windows for an opening, but, instinctively directed toward light, will release a violence of sprawling, fluttering, aimless to and fro jerky motions which are spasmodically repeated until one of them by chance carries it through an open window into freedom, after which the usual motions of flying are at once resumed.

Such methods of escape mechanism are referred to by Kretschmer as violent-motor-reaction. In living beings, it is stated, the violent-motor-reaction is a typical reaction to situations which threaten the course of life. It is a spontaneous reaction of biologic adaptation. In the course of evolution this type of reaction as a biologic defense mechanism assumes a place of relatively less importance. More expedient forms cover over the older reaction type. In apes there is a beginning of systematic search and deliberation, a more quiet and less motor type of reaction. In adult human beings, selective voluntary action becomes more noticeable, and only under conditions of peculiar stress will the violent-motor-reaction be observed. In cases of panic, for instance such as in an earthquake, a crowd of people will behave very much like an imprisoned bird. If among the many motions initiated there is one which by chance will take a person away from the danger zone, quiet at once ensues; the violent-motor-reaction has attained its purpose. The individual has achieved a gain through his biologic adaptation to a threatening situation.

Another group of instinctive reactions occurring in the lower forms of animal life, which exemplify a defense mechanism against threatening situations, has been referred to by Kretschmer as the sham-death-reflex. This is thought to have a close relationship to cataleptic and hypnoidal states. He refers to the work of Babak,[4] who has done much research on fish, especially callichthys, and who illustrates the hypnoidal process, or sham-death-reflex, as follows:

If startled, the animal almost instantly changes from a black to a whitish or reddish color, rapidly moves his pectoral fins and, instead of fleeing, throws himself upon one side and remains in that position. In addition, there appears a certain amount of rigidity, the fins are spread, and the gill movements cease for a time. The animal may remain motionless for a quarter of an hour or more, and, to arouse it, one must often shake the animal strongly or push it farther under the water, whereupon the normal swimming movements will usually follow.

It is stated that similar reactions may be traced and studied all through the animal series. Kretschmer believes it is significant that this "animal hypnosis" prefers the same situations around which hysterical reactions in man are most frequently grouped; namely, danger to life and the business of reproduction. In the service of reproduction, he states, are seen examples of reflex immobility very well demonstrated in chickens.

Through the few examples that have been given, I have called attention to some of the biologic principles which underlie the formation of escape and defense reactions in the presence of threatening situations and briefly referred to the fact that, in adult human beings, selective voluntary action becomes more noticeable with the intricate and elaborate development of a personality makeup. More useful and expedient formations cover over the older reaction types. Through them all, however, is seen a similar tendency of the living organism to act in unusual or extraordinary ways in times of stress. There is always a purpose to be fulfilled, whether it is instinctive and unconscious or in the twilight zone of consciousness and rationality. Such purpose is, at least, of temporary advantage both to the lower animals and to human beings. In the latter it is referred to as a neurotic reaction, and in most instances is a defense against or a flight from an unhappy inner experience.

The commonly designated pleasure-pain principle of analytic psychology means that all of us, either consciously or unconsciously, endeavor to seek that which is pleasurable and avoid that which is painful. In our effort to escape the painful and still preserve our self esteem, however, many unhappy inner experiences are sometimes relegated to the realm of the unconscious and deposited there as if they had never existed. Some of these which may, for months or even years, appear to have been permanently forgotten are surcharged with such emotional content, however, that an outlet is inevitable, and they will escape either in the form of disguised and distorted dreams or through neurotic and psychotic reactions. In other words, there is always present the instinctive or unconscious tendency to escape from the painful experiences of reality in times of stress. In lower animals this is exhibited in excessive activity of the pristine motor system, in the form either of violent-motor-reaction or of the sham-death-reflex; in human beings, by more highly developed, yet not dissimilar, psychobiologic reactions which have a definite, and sometimes dramatic, purpose in keeping the individual out of the zone of danger. From the psychiatric standpoint, a danger zone may be thought of briefly as a situation in which there is evidence of persistent emotional conflict, based on a deep seated anxiety and inadequate adjustment thereto, which threatens to carry a major portion of the human personality beyond the realm of conscious reality.

Repressed anxiety, which is the essential factor in the symptom formation of all the psychoneuroses, is usually the result of an unconscious sense of guilt, sometimes, though not always, based on a preexisting feeling of hatred or bitterness toward an individual or situation, secondary to the frustration of some selfish desire. Such anxiety is therefore closely related to unhappy inner experiences already referred to. Although repressed, anxiety never lies completely dormant and constantly craves some method of expression. If not released in psychomotor restlessness or similar forms of exaggerated emotional response, other avenues of escape will inevitably ensue. It may, by transference, appear in the form of various motor and sensory disturbances closely simulating organic disease and thus produce such somatic symptoms as will satisfy the self esteem of its host until other and more rational outlets are available. Anxiety has for the time being been converted into psychoneurotic symptoms which give at least partial relief of the inner tension and have therefore been of psychobiologic value to the individual. In fact, it is now believed by some that the development of a psychoneurosis may in many instances actually forestall the onset of a frank psychosis or even be the means of escape from suicidal impulses. I do not wish to give the impression of putting a premium on the psychoneuroses but offer no apology for calling attention to some of the benign characteristics of these disorders which, in their compensatory formations, have a tendency to preserve the integrity of the personality, an essential requisite of mental health.

4. Babak: Arch. f. d. ges. Physiol., 1917.

### NEUROTIC TENDENCIES IN CHILDHOOD

Clinical statistics are not thus far easily available to show with any degree of accuracy what percentage of psychoneuroses in adults is an outgrowth of neurotic tendencies in childhood, since it is known that child guidance clinics in this country were not fully established on a broad scale in the larger cities until the end of the third decade of the present century. About the middle of the previous century, however, a London physician by the name of John Elliotson [5] published articles on functional nervous diseases of childhood, pointing out that much that passed for naughtiness was indeed illness and that many children who showed antisocial tendencies were sick children whose place was in a hospital rather than in a reformatory. In the latter part of that century there was a still further development in the knowledge of nervous diseases, especially in Europe, and it was Sigmund Freud [6] of Vienna who threw more light on these disorders in childhood. It was perhaps he who first called attention to the fact that the roots of functional nervous disorders of adults could be traced back to early years, when definite nervous symptoms had disturbed the life of the patient, although they had usually remained unrecognized by those attending the child. We are furthermore equally indebted to Pierre Janet [7] of Paris for much of our knowledge of the principles which underlie the symptom formation of the psychoneuroses, especially in adults.

There has been some objection to the use of the term "neurotic child" on the ground that it is too general and vague and that it is used to denote widely divergent types of nervous disease. An effort to soften the term to "the problem child," "the difficult child," "the maladjusted child" removes the idea of illness still further, however, from the thoughts of those who have such children in their care and fosters a belief that the abnormalities displayed are evidences of temperamental awkwardness or social incompatibility. There are such traits, of course, but they are symptoms rather than the disease itself. A more valid objection to the word "neurotic" is that damage may arise from a too free use of the term. It has, aside from its medical sense, a popular use as an epithet of disdain. Parents may therefore resent the term, and even physicians are sometimes inclined to dismiss such a case as one for which there is nothing particular to prescribe except bromide, diet or fresh air. Many are still inclined to labor under the old misconception that "neurotic" means undisciplined, uncontrolled, naughty or badly brought up and to believe that if only the wayward child could be brought to see the error of its ways, and the parents taught to manage its education more skilfully, the problem would be adequately solved. It is becoming increasingly obvious, through the influence of the mental hygiene movement, that the treatment of nervous disorders in childhood is not so simple as that.

We sometimes hear the twentieth century referred to as the century of the child, and there is much justification for the statement. There has been a vast amount of progress in the improvement of facilities for his education, recreation and broader cultural achievement and for the protection and improvement of his physical well being. In close pursuit of this progress, facilities for the preservation of his mental health have been greatly improved and enlarged. We are more conscious than ever before that the mentally healthy child of today will be the good citizen of tomorrow and for this reason more attention is being paid to the nervous disorders of childhood which may be related to psychoneuroses of later life. We are less concerned perhaps with behavior problems associated with mental deficiency, which are more easily recognized and the solution of which has been much simplified by well formulated methods of procedure. It has been learned, furthermore, that many of the common behavior problems of boys and girls are associated with slight deviations of personality reaction, which often occur in children of good intellectual and emotional endowment and when properly understood are recognized as being quite normal or at least average reactions to difficult interpersonal relationships or other disturbing environmental influences. In some cases there are physical disorders which have been overlooked and which are contributory to reactions of impatience, irritability or even rebellious conduct. One cannot therefore stress too much the importance of a thorough physical examination, with adequate laboratory studies when indicated, of the child whose happiness and efficiency appear to be seriously disturbed.

### RECENT GROWTH OF INTEREST

Within the present decade, more particularly within the past five or six years, an increasing interest has been noted of the mental hygiene movement as related to the psychoneuroses through the influence of Dr. Franklin G. Ebaugh of Denver, professor of psychiatry, University of Colorado Medical School, and director of the Division of Psychiatric Education of the National Committee for Mental Hygiene. Dr. Ebaugh has within this time insisted that the departments of psychiatry of the medical schools of this country give more attention to the teaching of the psychoneuroses, and I am sure that he has been gratified by the favorable response to his suggestion. How much importance he attaches to an adequate understanding of these disorders is indicated by a chapter in his book,[8] from which I quote:

> The neuroses constitute the most frequent pathological situations encountered by the neuropsychiatrist. Their frequency is not reflected in statistics, since neurotic patients, although they make up the bulk of the clientele of neurologists and psychiatrists in private and in outpatient practice, nevertheless rarely seek treatment in public mental hospitals. The student should view the problem in the light of its tremendous social significance. If it could be reckoned, it would probably be found that the sum total of economic and social liabilities produced by the neuroses would be greater than the amount of damage inflicted on society by the psychoses.

While one cannot escape the conclusion, looking at the subject from a broad and unprejudiced point of view, that the psychoneuroses constitute a tremendous medical, social and economic problem, it should not escape attention that a large percentage of the most brilliant accomplishments in the fields of art, science and literature have been achieved by those who have had manifest neurotic tendencies, if not actual psychoneuroses. The same might be said of many of the outstanding leaders of commerce and industry, as well as of a host of others in the skilled professions. In other words, without citing prominent examples with which many are familiar, it would appear that the psychoneurotic individual has made a substantial contribution

5. Elliotson, John: The Zoist, London, 1842-1855.
6. Breuer, Josef, and Freud, Sigmund: Studien über Hysterie, Leipzig, F. Deuticke, 1895.
7. Janet, Pierre: Etat mental des hystériques, New York, G. P. Putnam's Sons, 1901.
8. Strecker, E. A., and Ebaugh, F. G.: Practical Clinical Psychiatry for Students and Practitioners, Philadelphia, P. Blakiston's Son & Co., 1935.

to the social and economic progress of civilization; this by means of a strong impulse and peculiar vision which may be greater than that of others possessing equal intellectual and emotional endowment. He has given color to life in the variety of his achievement which has made him almost if not quite indispensable to the happiness of others.

It is obviously not within the scope of this paper to undertake even an adequate outline of the most acceptable and efficacious methods of handling the various forms of human behavior which might fall within the classification of the psychoneuroses. Some of the fundamental principles of such an approach have only been implied. No effort was made to discuss the undoubted influence of social and economic factors which now play such an important role in the production of anxiety states. These, however, affect such large groups of people in any given community that much of their anxiety may be regarded as falling within normal limitations of reaction to difficult situations which are not peculiar to any particular individual. There is little, if any, repression of such anxiety and, therefore, less typical psychoneurotic behavior than might be anticipated. I did, however, call attention to some of the conditioning influences of childhood and referred to compensatory neurotic reactions which are sometimes of value to the adult and which may be regarded as benign and inevitable formations of escape from the inner tension of threatening or unbearable states of emotional conflict.

Throughout this discussion I have endeavored to emphasize the tremendous constructive influence of the mental hygiene movement, and especially that of the National Committee in its various fields of activity. However, our principal interest has been stimulated by the increasing recognition, by psychiatrists and other mental hygienists, of the need of a better and more widespread understanding, by physicians generally, of the nature and what appear to be some of the sources of origin of the psychoneuroses. Since they are looked on as benign types of deviation in personality reaction, which are believed to have their origin in early childhood and to be dependent on various fixations at that period of life, they offer much encouragement to those who have sufficient knowledge, experience and patience to undertake a study of the total personality makeup and to investigate the motivations of its various types of behavior. The most frequent motivation in the average case presenting symptoms of psychoneurotic reaction to repressed anxiety is an evident tendency to regress to childlike or infantile types of behavior, representing various forms of escape from reality, and some of these by conversion may simulate serious somatic disease. Hence the need again of a thorough physical examination in any case presenting even the most clearly defined clinical symptoms of a psychoneurosis. This is not only of value in itself but will also increase the confidence of the patient and help to preserve his self esteem.

The regressive tendency in all the psychoneuroses is of such importance that it has justified the synonymous designation of "regression neuroses" for these disorders. It represents a reaction of dependence and lack of self reliance in times of stress and is evidence of more easy adaptability on a level of emotional immaturity. In other words it is an indication, at least in some degree, of inadequate character formation. This at once suggests the importance of character building agencies during the formative period of childhood, including the home, the school, the church, the playground and other recreational facilities, along with the development of special skills and cultural outlets. All are valuable aids in the enhancement of a feeling of self reliance, an indispensable need of later life and one that will enable the individual to make emotional adjustments on a more mature level of adaptability. After a sufficient degree of insight has been given by whatever method may be employed, this is the goal which is sought in the treatment of adult psychoneuroses with regressive tendencies, many of which occur in persons who show unmistakable evidences of inadequate character formation in early childhood.

In efforts such as these, and others of equal importance, the mental hygiene movement has taken a prominent part, especially in recent years. It has supported the leadership of those who have demonstrated that much can be done in a program looking toward a better understanding of the mental health of people who give evidence of benign deviations of personality reaction and who constitute a considerable proportion of our most valuable population.

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## *Special Article*

# THE PHYSIOLOGY OF VITAMIN C

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*This article and others recently published or to be published comprise a new series on the present status of our knowledge of the vitamins. They have been prepared under the general auspices of the Council on Pharmacy and Chemistry and the Council on Foods. The opinions expressed are those of the authors and not necessarily the opinions of either council. Reprints are not available but the articles will be published later in book form.*—ED.

### ORIGIN AND PHYSIOLOGIC CONTROL

Dry seeds contain practically no ascorbic or dehydroascorbic acid but, when they are moistened and warmed, ascorbic acid appears within a few hours in the areas where the sprouting processes are apparently initiated.[1] Unripe, rapidly growing seeds, such as green peas, are relatively rich sources of the vitamin, but as ripening advances the concentration approaches zero. An extensive literature [2] indicates that all actively growing parts of the higher plants (roots, stems, buds and pods), all fresh green leaves, many of the algae [3] and perhaps even bacteria [4] contain significant quantities of the vitamin. The carotenoid pigments are frequently accompanied by high concentrations of ascorbic acid in both plant and animal tissues, as in rose hips, paprikas and corpora lutea, but there are many exceptions to such a relationship, as in vitamin rich, nonpigmented sprouts.

Of the extensive number of animals studied, only man, the other primates and guinea pigs do not have a

From the University of Pittsburgh.

1. Glick, David: Quantitative Distribution of Ascorbic Acid in the Growing Barley Embryo, Ztschr. f. physiol. Chem. **245**: 211 (Feb.) 1937. von Hausen, Synnöve: Die Rolle des Vitamins C beim Wachstum der höheren Pflanzen, Biochem. Ztschr. **288**: 378 (Dec.) 1936.
2. King, C. G.: Vitamin C: Ascorbic Acid, Physiol. Rev. **16**: 238 (April) 1936.
3. Norris, E. R.; Simeon, M. K., and Williams, H. B.: The Vitamin B and C Content of Marine Algae, J. Nutrition **13**: 425 (April) 1937.
4. Bourne, G., and Allen, R.: Vitamin C in Lower Organisms, Australian J. Exper. Biol. & M. Sc. **13**: 165 (Feb.) 1935.

capacity to synthesize ascorbic acid. There is no convincing evidence that infants, placental tissue or any of the tissues of the animals named can synthesize ascorbic acid at any stage in their development. The evidence that is frequently cited in the literature to prove such a synthesis can be interpreted as well, and in most cases better, on the basis of selective conservation of the vitamin in the more vital tissues, such as the pituitary body, during a period of general body depletion. Furthermore, it is known that both human beings and guinea pigs are subject to scurvy during gestation and lactation. The early synthesis of vitamin C in chick embryos [5] demonstrates a tissue reaction that is retained by the adult organism.

The claim that mannose could serve as a precursor of vitamin C in rat tissue could not be confirmed.[6] There is still no clear evidence concerning the nature of the substance from which vitamin C is synthesized in animals or plants, nor is there any indication of the specific agencies or tissues responsible for the synthesis. The known metabolites in plants and animals that are most closely related to the vitamin are glucuronic and galacturonic acids. Either of these could give rise to the vitamin by replacement of the carbonyl group from the first to the fourth or fifth carbon, followed by lactonization and enolization.

The distribution of vitamin C in the human body [7] is comparable with that in the guinea pig and in animals that synthesize a continuous supply in their own tissues, such as the rat and the chicken.[8] Giroud [9] has studied an extensive number of invertebrates. In general, the tissues that are characterized by a high metabolic activity have a high vitamin C content. Thus the individual tissues of young animals are consistently richer in vitamin C than those of older animals, and in special cases in which one can follow the changing vitamin content during cycles of activity and atrophy the relationship to functional activity is striking. An excellent illustration of this principle is provided by the microtitration studies of Glick and Biskind on thymus [10] and corpus luteum.[11]

Normal tissues from different animals do not fall in exactly the same sequence with regard to concentration, but the following order corresponds approximately to a general decreasing concentration of vitamin C: pituitary body (2.6 mg. per gram in the pars intermedia), corpus luteum, adrenal cortex, young thymus, liver, brain, testes, ovaries, spleen, thyroid, pancreas, salivary glands, lung, kidney, intestinal wall, heart, muscle, spinal fluid and blood. Normally the average content of human blood plasma is about 1.2 mg. of vitamin per hundred cubic centimeters,[12] but depletion reduces this to about 0.8 mg. as the "prescorbutic state" is reached and to approximately 0.5 mg. with the appearance of "clinical scurvy." Tumor tissue varies greatly with different types but generally shows a high content during rapid growth and a characteristic decrease with necrosis.[13]

In relation to infant nutrition and from the point of view of comparative physiology, it is both interesting and important to note that human milk normally contains from four to five times more vitamin C than cow's milk. The human infant has a high dietary requirement to meet the need for rapid growth and general metabolism, but the calf is not dependent on a dietary supply, its current requirement being met by tissue synthesis, as in the rat and the chick. When the human mother's diet is seriously deficient in antiscorbutic foods, however, the concentration in the milk gradually falls to approximately that of cow's milk,[14] and when the vitamin C intake is increased, the antiscorbutic value of the milk returns to normal.

### METABOLISM

Harris and Ray [15] and later many other writers have shown that there is a continuous but decreasing urinary excretion of vitamin C when there is no dietary intake. When the body has become depleted of its normal vitamin C content, readministration of the vitamin first causes a restorage in the various tissues, and when the deficiency has been made up, urinary excretion of the excess again follows. Such balance experiments provide a reasonably satisfactory means of clinically evaluating the various stages of malnutrition. The net loss, or difference between intake and excretion, for a person in a state of "saturation" may be taken as an approximation of the quantity normally destroyed, or "burned," in the body daily. This value apparently varies considerably with different persons but may be estimated to fall in the range of from 25 to 50 mg. daily. It appears from the work of Hawley and her associates [16] that the quantity of vitamin excreted may be varied by merely changing the acid-base balance of the food intake.

### GENERAL PHYSIOLOGIC RELATIONSHIPS

The most clearly established functional role of vitamin C in animal tissues is its relationship to the physical state of the "intercellular material," as described by Wolbach and his associates. A detailed discussion of this field of study will be found in the section on pathology. The relationship of vitamin C to calcium metabolism is intimately associated with this phenomenon and is discussed in the same section. Both roles are clearly of major importance in relation to growth and repair of bones and teeth, and it is evident that other tissues, such as cartilage and white fibrous tissue, are markedly affected in a similar manner. The chemical mechanism through which the vitamin brings about this control of metabolism is still unknown.

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From the close relationship between growth and vitamin C content it is reasonable to conclude that the vitamin has an essential role in the over-all growth processes of animals and plants. Work by Bonner and Axtman indicates that ascorbic acid serves as a powerful growth stimulant for young plant embryos that have been isolated from their seed reserve food supply.

Using the acid and silver nitrate staining technic, Bourne and Allen [4] and Giroud and Leblond [17] made detailed studies of the distribution of ascorbic acid within the cell, as well as the relative distribution in whole tissues. In an extensive series of papers from the two laboratories they have emphasized the association of the vitamin with the Golgi apparatus and mitochondria. Their results have served to emphasize the selective retention of the vitamin in certain parts of the cell and in vital tissues such as the pituitary body.

The anemia that accompanies depletion of vitamin C is thought to be due primarily to dysfunction of the tissues that form the red blood cells rather than to excessive destruction of cells or specific failure in synthesis of hemoglobin. The decrease in hemoglobin is roughly parallel to the decrease in red blood cells and is accompanied by a moderate decrease in clotting time and in the number of blood platelets.

When guinea pigs are given diets free from vitamin C or low intakes, impairment of physiologic functions can be demonstrated before growth is severely restricted or external evidences of scurvy appear. This "prescorbutic state" is clearly of common occurrence in the general population and in relation to human physiology and public health apparently represents an important field of investigation. Animals in such a border stage of deficiency are more sensitive to injury from injections of diphtheria toxin,[18] and their normal metabolic activity, as measured by dextrose tolerance, is moderately lowered.[19] Many, if not all, of the reports indicating detoxification by ascorbic acid in vitro apparently were due to underestimating the importance of $p_H$ effects.[19] The arteries, teeth and adrenals are particularly sensitive to injury by toxins when the tissues are depleted of their normal vitamin C reserves. Resistance against infections is also lowered in the prescorbutic condition,[20] and it is worthy of note that bacterial toxins can cause losses of from 50 to 85 per cent of the vitamin normally contained in the adrenals.[21]

The claim by Szent-Györgyi that a new factor called "vitamin P" is responsible for the antihemorrhagic effect attributed to vitamin C has been shown to be erroneous. The postulated "vitamin P" apparently does not exist.[22]

### SPECIFIC RELATIONSHIPS TO ENZYMES

At the present time it is impossible to indicate with certainty any specific relationships between vitamin C and the enzymes in animal tissues so far as normal physiologic processes are concerned; but many papers record activating and inhibiting effects on enzymes in vitro and it is not unlikely that some of the observed effects [2] will prove to be physiologically significant.

Both ascorbic acid and dehydroascorbic acid, and a number of their cation complexes (e. g., with $Fe^{++}$, $Cu^{++}$ and $Mn^{++}$) have been reported to exert marked effects on specific enzymes, and studies on cathepsin, papain,[23] amylase,[24] arginase, catalase, urease,[25] tyrosinase and nuclease [26] have offered special promise. It is likely that many (but probably not all) of the observed effects are more or less fortuitous observations in vitro, with little bearing on the role of the vitamin in vivo. The results from different laboratories have not been in good agreement, and it is evident in some cases that the nonspecific acidity and reducing effects of the vitamin have caused changes that were attributed specifically to the vitamin.

The catalyst frequently called "ascorbic acid oxidase," which occurs widely in plant tissues, has been shown to have the composition and properties of a protein combined with copper, in which the copper serves as the active catalyst.[27] Since there is evidence that the catalyst, or enzyme, is not specific for vitamin C as a substrate,[27a] the name should be discontinued.

The cytochrome-indophenol oxidase system has been shown to act as a catalyst for the aerobic oxidation of ascorbic acid, and there is evidence that this system is chiefly responsible for the observed (slow) aerobic oxidation of the vitamin in excised animal tissues.[28] In view of Barron's [29] work, the hemochromogens are also of interest.

Although the theory is widely held that vitamin C serves primarily as a hydrogen-transport agent, or respiratory catalyst, there is no clear-cut evidence to support the theory in relation to animal tissues.[30] The experiments of Hopkins and Morgan [31] and of Borsook and his co-workers [32] strongly support the theory in relation to plants, however, and place special emphasis on the role of glutathione in such a cycle in animal tissues.[28] A strong point against the theory that vitamin C functions as a major respiratory catalyst is the fact that depleted tissues do not show a decreased respiration capacity, and when ascorbate is added to the depleted tissues there is no rise in the true oxygen consumption. The livers of scorbutic animals show an increased oxygen consumption which is comparable to that shown by the entire body.[30]

Recently Green and Richter [33] reported that ascorbic acid acts as an inhibitor in the adrenalin-adrenochrome

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oxidation system in heart tissue. Lemberg, Cortis-Jones and Norrie [34] have studied a coupled type of oxidation of ascorbic acid and hemochromogens, extending the earlier work of Barron [29] and Karrer, especially correlating the coupled oxidation with verdohemochromogen formation from hematin.

Great interest is attached to the finding by Ecker and associates of a close relationship between vitamin C and guinea pig blood complement.[35] The reversible oxidation-reduction behavior of complement, as a single protein substance, was found to be dependent in large part on the ascorbic acid content of the plasma. The normal activity of complement was contingent on its being present in the reduced state. Although other reducing agents such as glutathione, cysteine and hydrogen sulfide could bring about the reduction and activation, ascorbic acid was found to be the reducing agent of major importance in vivo.

Reedman and McHenry [36] have reported an extensive study of the degree of conjugation of ascorbic acid with protein in plants, but there has been no evidence that compounds of comparable stability occur in animal tissues.

# Council on Foods

## ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COUNCIL ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION AND WILL BE LISTED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED.

FRANKLIN C. BING, Secretary.

### CELLU BRAND APPLE RINGS

*Distributor.*—Chicago Dietetic Supply House, Inc., Chicago.

*Description.*—Slices of apples, peeled and without cores, packed in undiluted juice without added sugar.

*Manufacture.*—Roman Beauty apples are sorted, washed, peeled, cored, cut into rings or slices and blanched. The slices or rings are placed in cans, covered with undiluted apple juice, vacuum sealed and heat processed. The spray residue on the apples used is kept within the federal tolerance.

*Analysis* (submitted by manufacturer).—Moisture 87.4%, total solids 12.6%, ash 0.2%, fat (ether extract) 0.3%, protein (N × 6.25) 0.1%, reducing sugar as invert 6.7%, sucrose (by copper reduction) 2.7%, crude fiber 1.0%, carbohydrates other than crude fiber (by difference) 11.0%.

*Calories.*—0.47 per gram; 13 per ounce.

### (1) BURTON'S PURE LEMON EXTRACT
### (2) BURTON'S PURE ALMOND EXTRACT

*Manufacturer.*—W. Burton & Company, Inc., a wholly owned subsidiary of Fred Fear & Co., Brooklyn.

*Description.*—(1) Lemon extract containing ethyl alcohol, lemon oil and water.

(2) Almond extract containing water, ethyl alcohol and pure oil of almond.

*Manufacture.*—(1) The lemon oil is dissolved in ethyl alcohol, water is added and the mixture is filtered and bottled.

(2) The oil of almond is dissolved in ethyl alcohol, water is added and the mixture is filtered and bottled.

*Analyses* (submitted by manufacturer).—(1) Alcohol, by volume, 90%; water, by volume, 5%; oil of lemon, by volume, 5%. (2) Alcohol, by volume, 20%; water, by volume, 78.09%; oil of almond, by volume, 1.01%.

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36. Reedman, E. J., and McHenry, F. W.: Combined Ascorbic Acid in Plants, Biochem. J. **32**: 85 (Jan.) 1938.

### NUTRADIET BRAND APPLE SAUCE

*Distributor.*—The Nutradiet Company, a subsidiary of S & W Fine Foods, Inc., San Francisco.

*Description.*—Cooked strained apple sauce, packed without addition of sugar.

*Manufacture.*—Properly matured apples are graded, inspected, passed through water sprays to remove spray residues, and peeled. The peeled apples are washed, inspected, cut, steamed for seven minutes, strained and automatically packed into cans, which are sealed and processed.

*Analysis* (submitted by manufacturer).—Moisture 87.1%, total solids 12.9%, ash 0.2%, fat (ether extract) 0.04%, protein (N × 6.25) 0.2%, crude fiber 0.5%, carbohydrates other than crude fiber (by difference) 11.46%, titratable acidity as malic acid 0.5%.

*Calories.*—0.47 per gram; 13 per ounce.

*Claims of Manufacturer.*—For diets in which sweetened fruit is proscribed.

### MRS. PALEY'S BABY FOOD—STRAINED VEGETABLE SOUP WITH BEEF BROTH AND CEREAL

*Manufacturer.*—Paley-Sachs Food Company, Houston, Texas.

*Description.*—Strained vegetable soup containing beef stock, carrots, potatoes, tomato purée, soya beans, onions, cabbage, celery, barley and brown rice, slightly seasoned with salt.

*Manufacture.*—U. S. government inspected beef is wiped with a damp cloth and cut into small pieces. Meat and water are allowed to stand in a cool place for four hours, heated slowly and cooked. The juice is pressed out of the meat and cooled, the fat removed, and the stock cooked with the vegetables which have been cleaned and cut into pieces. The barley, brown rice and soya beans are soaked, precooked, and added to the stock and vegetables, and cooked in air-tight pressure cookers. The mixture is then strained, filled, sealed in vacuum sealing machine and heat processed.

*Analysis* (submitted by manufacturer).—Moisture 84.2%, total solids 15.8%, ash 1.1%, fat (ether extract) 0.2%, protein (N × 6.25) 2.6%, reducing sugars as dextrose 1.3%, sucrose 0.96%, crude fiber 1.02%, total carbohydrates other than crude fiber (by difference) 10.9%, calcium (Ca) 0.016%, phosphorus (P) 0.071%, iron (Fe) 0.001%.

*Calories.*—0.6 per gram; 17 per ounce.

### ASTORIA BRAND FREE-FROM-PRESERVATIVE CHERRIES

*Manufacturer.*—Fruit Products Corporation, Belleville, N. J.

*Description.*—Bottled, sweetened cherries free from preservatives; oil of bitter almonds, citric acid, U. S. Department of Agriculture certified color and a small amount of alcohol are added. The alcohol is used to dissolve the flavoring.

*Manufacture.*—Royal Anne Cherries, No. 1 grade, are immersed in a dilute solution of hydrochloric acid to remove spray residue, washed, placed in a solution of sulfurous acid (3,000 parts per million of $SO_2$ in water) to bleach the cherries, destroy any organic living matter and preserve the fruit until it is heated. The cherries are washed several times, pitted and stemmed by hand, blanched, again washed in cold water and colored in cold water with U. S. Department of Agriculture certified color. The fruit is heated in sugar syrup containing a small amount of citric acid and allowed to stand in the syrup until the fruit and juice cool to room temperature. The fruit is drained and packed in bottles. Fresh syrup containing citric acid, oil of bitter almond flavoring and a small amount of alcohol is added and the bottles are automatically sealed and heat processed.

*Analysis* (submitted by manufacturer).—Moisture 70.0%, total solids 30.0%, ash 0.2%, fat (ether extract) 0.2%, protein (N × 6.25) 0.2%, reducing sugars as invert sugar 5.6%, sucrose 22.8%, crude fiber 0.3%, carbohydrates other than crude fiber (by difference) 29.1%, sulfur dioxide none, sodium benzoate none, certified food color present, flavor present.

*Calories.*—1.2 per gram; 34 per ounce.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, SEPTEMBER 17, 1938

## THE PROBLEM OF THE REFUGEE PHYSICIAN

The anti-Jewish campaign of the German government, reflected in the Berlin letter in this issue of THE JOURNAL, and the more recent actions taken in Austria and in Italy have brought prominently before the American medical profession the problem of the physician who is a refugee. Important is a knowledge of the scope of the problem, for which exact data are required. Table 1, secured through the assistance of the Immigration and Naturalization office of the United States Department of Labor, gives the number of immigrant alien physicians from Austria, Germany and Italy during each of the years from 1928 through 1938.

TABLE 1.—*Immigrant Aliens from Austria, Germany and Italy (Last Permanent Residence) Admitted to the United States as Immigrant Aliens for Permanent Residence, Whose Profession or Calling was Physician, Years Ended June 30, 1928 to 1938*

| | Immigrant Physicians from: | | |
|---|---|---|---|
| During | Austria | Germany | Italy |
| 1928 | 3 | 22 | 11 |
| 1929 | 5 | 22 | 11 |
| 1930 | 8 | 13 | 11 |
| 1931 | 8 | 8 | 16 |
| 1932 | 14 | 9 | 15 |
| 1933 | 4 | 4 | 8 |
| 1934 | 6 | 160 | 12 |
| 1935 | 13 | 91 | 6 |
| 1936 | 11 | 242 | 9 |
| 1937 | 15 | 271 | 14 |
| 1938* | *62 | 302 | 26 |
| Totals | 149 | 1,144 | 139 |

* Figures for the last fiscal year subject to possible slight change when final statistics for that year become complete.

With the aid of the state medical licensing boards and the Council on Medical Education and Hospitals, table 2 was prepared of the graduates of foreign schools licensed in the United States in the years 1928-1937 inclusive.

While the total number of physicians coming to this country from abroad may not be great, the problem is increasing. No doubt the difficulty may well continue until all living Jewish physicians from Germany, Austria and Italy have been transplanted. Perhaps six to seven thousand physicians will be absorbed by the rest of the world, approximately 3,000 being already absorbed.

Interesting observations develop from a comparison of the two tables here included. Apparently many American citizens are studying abroad, securing diplomas from foreign medical schools and returning to the United States. Thus 271 immigrant physicians came from Germany in 1937, but 335 were licensed, making some sixty Americans who returned. Fifteen immigrant aliens came from Austria in 1937, but the total number licensed was eighty-four, making sixty-nine who were probably American citizens. One hundred and thirteen immigrants from Italy were licensed in 1937, but only fourteen were aliens. The American

TABLE 2.—*Graduates of Foreign Schools Licensed in the Years 1928-1937 Inclusive*

| Year | Germany | Austria | Italy | Czecho-slovakia | Hungary |
|---|---|---|---|---|---|
| 1928 | 16 | 9 | 13 | 6 | 8 |
| 1929 | 31 | 17 | 36 | 5 | 12 |
| 1930 | 20 | 18 | 16 | 3 | 14 |
| 1931 | 19 | 13 | 26 | 4 | 12 |
| 1932 | 14 | 18 | 29 | 3 | 13 |
| 1933 | 18 | 17 | 35 | 3 | 12 |
| 1934 | 157 | 22 | 34 | 7 | 7 |
| 1935 | 155 | 28 | 48 | 1 | 13 |
| 1936 | 291 | 48 | 80 | 5 | 4 |
| 1937 | 335 | 84 | 113 | 4 | 23 |
| Totals | 1,056 | 274 | 430 | 41 | 118 |

Medical Association has called attention repeatedly for the last ten years to the problem of American physicians studying abroad in schools of lesser rank than those available in this country and then returning to the United States to secure licensure.

This problem is one which is already concerning the various state medical licensing boards, since the licensure of doctors to practice is still within the power of the individual states. The question of restriction of immigration is one which will no doubt come before the Congress of the United States. The situation is fraught with difficulties arising from economic stress, chauvinistic prejudices, fears that have been stimulated by propaganda, and other motivations. The American Medical Association through its House of Delegates at the San Francisco session adopted a resolution expressing the desirability that foreigners, graduates of foreign institutions, be required to obtain full citizenship in the United States before being admitted to practice. It is significant, as reported by the correspondent from Warsaw in this issue (page 1120), that hasty action has resulted in a disruption of the national medical association of Poland, leaving the physicians as a profession at the mercy of the politicians. Only by careful sympathetic consideration will a reasonable solution be possible.

## CHANGING POPULATION: THE PREMISE

The probable future population of this and other countries is, as has been pointed out editorially in THE JOURNAL,[1] important for long-range planning in health matters as well as in other economic subjects. Recognition has been accorded this fact by the federal government in a lengthy report to the National Resources Committee on the problems of a changing population.[2] According to the estimates of Warren S. Thompson and P. K. Whelpton, based on medium fertility and mortality rates, the population in the United States will continue to grow for fifty years but at a constantly decreasing rate, reaching 152,000,000 in 1980. Even with the highest rate that might reasonably be assumed, there would be a natural increase of less than 50,000,000 from 1935 to 1980. The minimum estimate on the other extreme would give a peak population of 138,000,000 in 1955 with a decrease of 10,000,000 during the succeeding quarter century.

These alternate estimates are based on extension of trends of birth rates and death rates now in evidence with allowance for certain qualifying factors. They all assume, however, that the span of life cannot be greatly extended—at least in comparison with the results of the past—and that there will be no sudden or complete reversal in the birth rate or any extraordinary effect on the size of the population from immigration or emigration.

These assumptions are an integral part of the forecast and the conclusions which the latter imply. The earliest life table for any area or population of the United States was that of Wigglesworth for Massachusetts and New Hampshire for the year 1789. According to his computation the expectation of life at birth at that time was 34.5 years for males and 36.5 years for females. While these results cannot perhaps be accepted at face value, the life expectancy for the total population of Massachusetts was 43.5 years in 1890. This may be compared with the expectation for the white population of the United States in 1929-1930 of 59.3 years for males and 62.6 for females. The improvement, while striking, may be compared, the report states, with the still longer expectation obtaining in New Zealand in 1931 of 65 years for males and 68 years for females, or in South Dakota in 1930 of 64.4 years for males and 66.8 years for females. These varying figures on life span indicate that the immediate prospects of attaining a great increase in life expectancy beyond present figures are not good.

The assumption that the birth rates will continue their present trend is difficult either to affirm or to deny. It is probable, but of course accurate evidence is lacking, that there has never been a time in man's past when the number of children born in proportion to the number of women in the childbearing ages has been less. The biologic significance of this phenomenon is obscure. Likewise it cannot be said with certainty as yet that this apparent trend toward reversal of fertility is permanent. It is of too recent origin biologically, if not statistically, to constitute a thoroughly acceptable concept. If it is not to be continued, then the whole fabric of prophecy will collapse. It is most unfortunate in this connection that Clyde V. Kiser's discussion of the role of contraception on differential birth rates should have been deleted from the report.[3] If this factor is as important as is generally believed, its present and future influence on birth rates must be profound.

The report allows for a moderate amount of immigration after 1940 in some of the alternate estimates. This factor is at present an imponderable: the degree to which immigration may or may not occur is intimately bound up with mass psychology and the economic and labor pictures. Neither society as a whole nor governments individually have yet succeeded in consciously influencing any of these factors with conspicuous success. The effect of possible emigration on the population apparently has been ignored in the report. While there is certainly no reason to expect it in any ponderable quantity, it is a factor which might occur and should at least be mentioned.

Although this report on population may be considered one of the best that has ever appeared on the subject, its prophetic validity rests on certain assumptions the correctness of which only time can prove.

1. Headed for the Last Census? editorial, J. A. M. A. **109**: 1638 (Nov. 13) 1937; Population—Supply and Demand, ibid. **109**: 1726 (Nov. 20) 1937.

2. The Problems of a Changing Population, Report of the Committee on Population Problems to the National Resources Committee, May 1938.

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## THE TYRANNY OF ABBREVIATIONS

When abbreviations are used in medical papers, in the recording of case histories or physical examinations or in operative or pathologic reports, the meaning should be entirely clear to all who may have occasion to read them. This is not, of course, the case. Abbreviations of medical terms are used obviously to save the time of the writer; too often, however, the time thus saved is wasted many times over by the person who is trying to decipher the meaning originally intended. When placed within a context, many of the abbreviations commonly employed in medicine are reasonably clear to those intimately familiar with the particular field; but when removed from such environment they become even more abstruse. Few readers for example can probably identify with ease such fairly commonly employed abbreviations as M. T. R., PcB, P. P. D., M. E. D., s. e. d., M. K. R. or K. P. Even when the abbreviations are placed in the proper setting many medical men would have difficulty in translating PcB into "near point of convergence," M. T. R. into "Meinicke flocculation reaction" or M. E. D. into "minimal erythema dose."

3. Notestein, Frank W.: Population Index **4**: 136 (July) 1938.

Although for the uninitiated the ophthalmologists possess probably the worst collection of uninterpretable abbreviations, such as K. P. for "keratitis punctata," Hm for "hyperopia manifest," O. U. for "oculus uterque (both eyes)," M. A. for "meter angle" and so on almost ad infinitum, those in other fields are by no means free of criticism. The average physician would usually interpret P. S. P. as the "phenolsulfonphthalein test," M. L. D. as "minimal lethal dose" and possibly P. P. D. as "purified protein derivative," but others who also may need to translate such initials, including manuscript editors, social service workers and statisticians, may have serious difficulties. Sometimes the attempt at interpretation gives rise to persistent errors of more or less serious nature, such as the reasonable interpretation of E. coli as "Endamoeba coli" when it should have been "Escherichia coli."

Hours sometimes have been spent in attempting to decode the meaning of such abbreviations. The use of such short cuts to expression may be an indication of unnecessary haste, careless recording of notes, or slipshod methods of experimentation and study. Reports are written for the reader, not the author, and the reader should not have to be an expert in cryptography to find out what it is all about.

## *Current Comment*

### THE UNCARED-FOR MILLIONS

The Statistical Bulletin of the Metropolitan Life Insurance Company, basing its figures on reports from millions of industrial policyholders, is regarded as a prompt and reliable indicator of trends in public health, morbidity and mortality. Census Bureau final figures are necessarily delayed. Even the provisional death rates published annually by the United States Public Health Service are not available until some months have elapsed. The current figures published in the life insurance company's bulletin, therefore, afford interesting indications. Over a period of years they are found to parallel closely the final figures published later. Just now it is popular in certain circles to refer to the millions of Americans who are unable to procure medical care because of inability to pay for it. The low income groups, it is said, fare worse than the frankly indigent, because the latter get for nothing what the former are unable to buy and are too proud to accept on any other basis. What then are actually the health and mortality trends in the low income groups—the people who buy weekly payment industrial insurance? According to the Statistical Bulletin:[1]

> We live in an age of records. Some are justly proclaimed with banners flying and sirens screeching. Others, and not the least important, are achieved quietly, without the blare of trumpets, and would, indeed, pass altogether unnoticed were it not for statistics and statisticians. Their "dry" figures tell us that we are living in a period of remarkable achievements in public welfare. Our death rate, after a series of continued lows, has, in the first six months of the current year, bettered last year's figure by no less than 10 per cent and has thereby established an all-time record that may justly be described as phenomenal.

In a succeeding paragraph we find:

> With each succeeding month the mortality record for this year becomes more and more favorable. . . . Encouraging reports about the death rate in the general population of the United States come from various sections of the country. Alabama, Connecticut, Illinois, Indiana, Maine, Maryland, Michigan, Minnesota, New York, South Dakota and Virginia all report drops—and, in most instances, decided drops—in the number of deaths this year as compared with last.

Most significant of all is this statement, the italics being in the original:

> . . . to date, it is apparent that *depression and widespread unemployment have done no visible harm to public health.*

1. Mortality Record of the First Six Months of 1938, Statistical Bulletin, Metropolitan Life Insurance Company **19**: 3 (July) 1938.

### PSYCHIATRIC ASPECTS OF ARTIFICIAL FEVER THERAPY

In treating approximately 400 patients with the Kettering hypertherm, Ebaugh and his colleagues[1] noted that fever therapy appears to exaggerate a subject's main personality characteristics. The phlegmatic patient was generally little perturbed by the rise in temperature and was generally cooperative; the aggressive person commonly manifested signs of aggression and restlessness; the contented, sociable person became elated and even euphoric during hyperpyrexia. Exaggeration of personality patterns during the fever therapy was so consistent that, these authors believe, one might reasonably predict the individual patient's reaction to pyretotherapy if a previous evaluation of personality had been made. A common problem encountered in a department of fever therapy is the anxious, unstable person who is greatly concerned about his physical self and is apprehensive concerning fever therapy. He is peculiarly predisposed to delirious episodes and is often better rejected for hyperpyrexia, at least before suitable psychotherapeutic measures. The most important psychiatric problem of the fever therapist is the management of delirious episodes associated with hyperpyrexia. The number of such reactions, however, has been reduced in the later experience of these investigators. This is attributed to the application of psychotherapeutic measures, increased experience with fever therapy and careful control and avoidance of sedatives except when necessary. During the past year in the limited number of treatments in which sedatives were required, one dose of pentobarbital sodium 0.1 Gm. (1½ grains) or morphine sulfate 0.01 Gm. (one-sixth grain) was prescribed. Codeine sulfate 0.03 Gm. (one-half grain) was the drug of choice when sedation was necessary for children. Of the 350 patients who had delirious episodes during hyperpyrexia therapy, 200 were observed from February 1935 to February 1936, the incidence being one episode of delirium in four treatments. In the second series of 150 patients, observed from February 1936 to February 1937, the incidence dropped to one episode of delirium in eighteen treatments.

1. Ebaugh, F. G.; Barnacle, C. H., and Ewalt, J. R.: Psychiatric Aspects of Artificial Fever Therapy, Arch. Neurol. & Psychiat. **39**: 1203 (June) 1938.

# ORGANIZATION SECTION

## WHERE ARE HOSPITALS MOST NEEDED?

In determining whether and where there is need of additional hospital facilities, it is obviously necessary first to ascertain the extent to which existing facilities are being utilized. In the accompanying table the states are arranged in the order of the number of their general hospital beds per thousand of population. Mississippi, having the least hospital facilities, has 1.4 beds per thousand. At the other end of the scale, the District of Columbia has 8.6 beds per thousand, many of which, however, serve not the inhabitants of the district only but federal employees throughout the country.

Dividing the states into groups having hospital facilities in the ratio of 1:2, 2:3, 3:4, and so on beds per thousand, the utilization of these facilities in each group steadily rises as the number of hospital beds increases. Six states with from 1 to 2 beds per thousand show a use of 60.45 per cent. The next group, ten states, with hospital beds running from 2 to 3 per thousand, report 64.61 per cent occupancy. The next group, seventeen states with a ratio of from 3 to 4 beds per thousand, keep these beds 67.67 per cent filled. In eleven states, with from 4 to 5 beds per thousand, utilization is 69.96 per cent. In four states having from 5 to 6 beds per thousand, occupancy drops to 62.68 per cent.

It is obvious, therefore, that hospital facilities are most used where they are most abundant and that where the ratio of beds to population is lowest the rate of occupancy is also lowest. In other words, hospitals have been built in response to a community demand and have not, as a rule, been built where there is no demand. Doubtless some states would show a higher rate of occupancy if additional funds were available for hospitalization of the indigent. In other states, education is needed to overcome popular prejudice. In any case, no single formula for hospital facilities is applicable to all parts of the country or to the habits and customs of all the people.

*Utilization of Hospital Beds by States*

| | Beds per Thousand | Per Cent of Occupancy | Group Average |
|---|---|---|---|
| Mississippi | 1.4 | 50.1 | |
| Arkansas | 1.5 | 53.0 | |
| Kentucky | 1.7 | 58.1 | |
| Georgia | 1.8 | 66.4 | 60.45 |
| North Carolina | 1.8 | 65.6 | |
| Tennessee | 1.9 | 69.5 | |
| South Carolina | 2.0 | 63.4 | |
| Alabama | 2.1 | 64.4 | |
| Oklahoma | 2.1 | 55.2 | |
| Texas | 2.1 | 57.3 | |
| Indiana | 2.3 | 67.1 | |
| Missouri | 2.6 | 70.5 | 64.61 |
| Virginia | 2.6 | 71.3 | |
| West Virginia | 2.7 | 62.1 | |
| Ohio | 2.8 | 73.1 | |
| Iowa | 2.8 | 61.7 | |
| Florida | 3.0 | 57.9 | |
| Louisiana | 3.0 | 77.6 | |
| New Jersey | 3.0 | 72.2 | |
| Delaware | 3.1 | 71.8 | |
| Kansas | 3.2 | 62.3 | |
| Pennsylvania | 3.2 | 72.2 | |
| Idaho | 3.3 | 63.6 | |
| Nebraska | 3.3 | 62.4 | |
| North Dakota | 3.3 | 62.6 | 67.67 |
| Maine | 3.4 | 70.9 | |
| Michigan | 3.4 | 78.6 | |
| Vermont | 3.4 | 67.3 | |
| Connecticut | 3.5 | 72.9 | |
| South Dakota | 3.5 | 56.7 | |
| Illinois | 3.6 | 69.2 | |
| Utah | 3.6 | 67.5 | |
| Wisconsin | 3.9 | 64.7 | |
| Minnesota | 4.0 | 67.9 | |
| New Hampshire | 4.0 | 63.4 | |
| Oregon | 4.0 | 70.6 | |
| Maryland | 4.2 | 74.3 | |
| New York | 4.2 | 77.8 | |
| Washington | 4.3 | 64.7 | 69.96 |
| Rhode Island | 4.4 | 79.5 | |
| California | 4.6 | 74.1 | |
| Massachusetts | 4.6 | 72.1 | |
| Wyoming | 4.7 | 62.8 | |
| New Mexico | 4.8 | 62.4 | |
| Colorado | 5.0 | 64.6 | |
| Arizona | 5.1 | 64.8 | |
| Nevada | 5.1 | 59.8 | 62.68 |
| Montana | 5.4 | 61.5 | |
| District of Columbia | 8.6 | 79.7 | 79.7 |

## WEST VIRGINIA'S ADULT PHYSICAL REHABILITATION PROGRAM

In West Virginia 923 men, who a comparatively short time ago were listed on public relief rolls as "unemployables" because they were suffering from minor physical ailments of one sort or other, now occupy places in private industry throughout the state. An additional 581 men, physically rehabilitated and no longer listed as unemployables, were awaiting placement, and 245 were convalescing in hospitals.

The economic outlook for these men was, every one agreed, doubly bleak. Not only had they been caught in the backwash of a worldwide depression, but the doors of private industry were closed to them because of their physical disabilities. Relief officials had accepted them as permanent charges.

Today, as a result of an experiment in human rehabilitation conducted by the West Virginia Department of Public Assistance in cooperation with the state medical society, a large percentage of these men have been restored to gainful employment.

The average cost to rehabilitate and restore to private industry each of these men has been $94.35. The average cost to maintain a person on the state's relief rolls for one year is $226.87.

Thus taking into consideration only these 923 men who have already resumed gainful employment, the state will, at the end of their second year of employment, realize a 100 per cent savings on its original investment, or $209,401, the amount which would have been required to keep them on relief rolls. This figure does not take into consideration reimbursements for hospitalization, artificial limbs and other expenses which the recipients are expected to make to the state, or the fact that as additional men are absorbed by private industry the annual saving will be increased.

This is the economic side of the picture. Aside from the commercial aspects of the program, the vastly more important social aspects are apparent—new hope for the future, independence for individuals and their families; the effects are far reaching and incalculable.

In 1934 Charles Ritter, director of compensation for the West Virginia Relief Administration, set about interesting relief officials in physical rehabilitation. He succeeded in obtaining $1,000 for the purpose of rehabilitating a small group of handicapped persons who would otherwise remain on relief rolls. The

experiment worked so convincingly that $20,000 was earmarked for this work the following fall. Ritter was advised and assisted by a committee of physicians. Joe Savage, secretary of the West Virginia Medical Association, helped him work out details of the plan.

When the public welfare law creating the new state department of public assistance was passed in June 1936, the rehabilitation work was made a part of the law and the division of adult physical rehabilitation, with Mr. Ritter as supervisor, was set up in the new department.

A report issued as of April 30, 1938, shows that, of 1,951 persons referred to the division, 1,565 have been rehabilitated and are able to resume gainful employment, 245 are convalescing in hospitals and 141 refused to accept hospitalization. Of the 1,951 persons, sufferers from hernia led in number with 507. Second in numerical importance, 365, were victims of impaired vision. Those requiring artificial limbs or other aids for physical handicaps numbered 166. Fractures of various kinds were involved in 136 cases. Other handicap causes included (with the number of cases in each category) renal and rectal disorders 123, hemorrhoids sixty-one, cataracts sixty-eight, goiter eighty, gallstones forty-six, tumors forty-nine, varicose veins forty-six, salpingitis thirty-seven, kidney stones thirty-one, ulcers thirty-six, osteomyelitis twenty-four, trachoma twenty-three, nervous disorders twenty, appendicitis fourteen, fistula nineteen, mastoids eighteen, ankylosis twenty-one, paralysis twenty-one, abscessed lungs sixteen, prostate gland nine.

Total relief grants for these 1,951 cases, less 103 incurables, was $419,253. The total cost of rehabilitation has been $177,233, or 42 per cent. Thus the savings to the state above the cost of rehabilitation represents $242,019, or 58 per cent. A more detailed tabulation, by Supervisor Charles Ritter, is given in the accompanying table.

To be eligible for rehabilitation, applicants must be at least 18 years of age, citizens of the United States and on relief rolls. Since the program is primarily designed to restore handicapped persons to private industry, only those capable of being thus absorbed are accepted.

*Details of Cost of Rehabilitation*

| | | |
|---|---|---|
| General relief grants | $222,585.76 | |
| Public assistance grants | 42,023.40 | |
| Estimated commodity grants | 110,460.00 | |
| Administration expense | 44,184.00 | |
| Total grants and cost of relief in 1,951 cases less 103 incurables, 1,848 cases | | $419,253.16 |
| Total cost for adult physical rehabilitation operative cases | $137,405.32 | |
| Total cost for artificial limbs and prosthetic appliances | 27,045.00 | |
| Total administration expense | 12,783.22 | |
| Total cost of adult physical rehabilitation—1,951 cases | | $177,233.54 |
| Savings over cost of rehabilitation | | $242,019.62 |
| General relief, public assistance, commodity grants and administrative expenses for 1,504 persons completely rehabilitated and able to resume gainful employment April 30, 1938, average cost per person, $226.87 | | $341,212.48 |
| Total cost of physical rehabilitation in 1,504 cases, average cost per case $94.35 | | 141,902.40 |
| Savings over cost of adult physical rehabilitation | | $199,310.08 |
| General relief, public assistance, commodity grants and administrative expense for 923 persons who resumed gainful employment April 30, 1938, average $226.87 | | $209,401.01 |
| Total cost for 1,504 persons completely rehabilitated, average cost $94.35 | | 141,902.40 |
| Savings first year | | $ 67,498.61 |
| Savings each succeeding year | | 209,401.01 |
| Total savings end second year and each succeeding year on 923 persons returned to gainful employment April 30, 1938 | | $276,899.62 |
| Total number of persons returned to gainful employment April 30, 1938 | 923 or 61.4% | |
| Total number of persons able to return but not yet returned to gainful employment April 30, 1938 | 581 or 38.6% | |
| Total able to return to employment April 30, 1938 | 1,504 or 100% | |
| Total persons approved to April 30, 1938 | | 1,951 |
| Total persons completely rehabilitated | 1,565 | |
| Total persons convalescing and in hospitals, April 30, 1938 | 245 | |
| Total persons approved but refused hospitalization | 141 | |
| Total | | 1,951 |

# GRADUATE MEDICAL EDUCATION

## A PROGRESS REPORT OF THE FIELD STUDY ON GRADUATE MEDICAL EDUCATION IN THE UNITED STATES BEING CONDUCTED BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

### MASSACHUSETTS

The Committee on Postgraduate Medical Instruction of the Massachusetts Medical Society was organized in March 1933 with Dr. Frank R. Ober as chairman, Dr. Leroy E. Parkins as secretary and with an executive committee, of which Dr. Reginald Fitz is chairman. This group has remained essentially unchanged, the three physicians originally interested in postgraduate instruction still being members of the executive committee of five. On the committee on postgraduate instruction are representatives of all sections of the state society, the chairman of the standing committee of medical education and diplomas and public health, the editor of the *New England Journal of Medicine*, the state health commissioner, the state commissioner of mental disease, the deans of Boston University School of Medicine, Tufts College Medical School and Harvard Medical School, or their representatives, and the president of the Boston Medical Library. This group formulates plans and policies, organization and administrative details being left to the executive committee.

When this organization was perfected the Harvard Medical School abandoned its extension courses for physicians, since the Massachusetts Medical Society had recognized its duty to provide graduate instruction for the profession. From the start, the committee has had the active support of such groups as the state health department, the state department of mental disease and numerous community and private hospitals.[1]

1. Parkins, Leroy E.: The Relation of Postgraduate Medical Instruction to Public Health, J.A.M.A. **103**:545 (Aug. 25) 1934.

The first postgraduate program was given in September 1933 in twenty-four centers of the state, local hospitals being utilized. A faculty of 174 physicians was carefully selected on their merits as postgraduate teachers. Two hundred and forty two hour sessions were given the first year. Each instructor received expenses but not an honorarium. Teams of two or three members visited various district societies in the state giving a series of ten weekly comprehensive review demonstrations and lectures. Physicians in each district had an opportunity to choose subjects from a list of twenty-two topics submitted by the postgraduate committee.

A local chairman was appointed for each district. He was nominated by the executive committee and approved by the district society. This physician had charge of local registration, preparation of clinical material, attendance and other local details. The state society appropriated $1,000 yearly for this postgraduate enterprise, and each physician who registered for the ten lecture series paid a $5 fee. The secretary of the executive committee received compensation for his services and clerical assistance. The headquarters of the state medical society became the headquarters of the postgraduate committee.

One thousand and two of the 4,406 practicing physicians active in the state society registered for instruction during the first year. There are 7,263 licensed physicians in Massachusetts. The second year such subjects as cardiovascular disease, nutrition, endocrinology, obstetrics and gynecology, surgery and industrial medicine were selected from a list submitted by the postgraduate committee. It became apparent as the plan progressed that representatives of district societies evidenced a feeling that local programs might be set up by the districts

themselves. It also seemed significant that instruction in certain subjects, such as venereal disease, was not chosen in spite of current propaganda regarding these diseases. The evaluation of instructors was recognized as a problem which required proper consideration.

In the fourth year in which the extension courses were given, reports of the committee on postgraduate instruction indicated that registration fees made up approximately 83 per cent of the revenue, that the remaining 17 per cent was made up by the state society's appropriation of $1,000, and that at the end of that year, after all expenses had been paid, a credit balance remained.

The council of the state society voted in 1937 to suspend the activities of the postgraduate committee until it was determined what plans for continuing the education of physicians could be developed under the impetus of the Social Security Act. Since the United States Public Health Service and the Children's Bureau of the Department of Labor delegated the administration of postgraduate courses to the state department of health, the state commissioner of health, Dr. Henry D. Chadwick, requested the executive committee of the state society to assist in organizing a faculty and in directing a program of instruction in a manner similar to the programs of the preceding four years. It was arranged, therefore, to give a series of from eight to ten sessions in eighteen places throughout the state on a budget of approximately $5,000. This allowed a $25 honorarium plus travel expense for each instructor, providing for approximately 136 sessions. One thousand dollars was appropriated for the expense of administration. The plan was approved by the council of the state society and finally by the state federal agencies, thus providing opportunities for postgraduate instruction without charge for licensed physicians in Massachusetts, the state medical society underwriting the expenses of incidentals, printing of programs, clerical assistance and additional administrative aids. The original committee continued to function with these modified plans with the full cooperation of governmental agencies.

Of the subjects offered for discussion, it is interesting to note those chosen by district societies. Obstetric topics were requested approximately twice as often as the next subject, therapeutics, while instruction in pediatrics was third in demand. Lectures on pneumonia, scarlet fever, heart disease, rheumatic fever, syphilis and gonorrhea were each requested by about two thirds of the district societies. It is interesting to note also that, while instruction in tuberculosis was offered, none was requested. Fifty-six physicians now constitute the extension course faculty with five chairmen who are in charge of the various divisions of instruction. District societies are urged to present clinical cases whenever possible, all meetings being held in or near hospitals. Lantern slides, many in natural color, and teaching exhibits are being utilized in this extension course. Seven hundred and eight practicing physicians received training under the new plan during the past year, an increase of 35 per cent over the preceding year.

Harvard Medical School offers courses for graduates in such subjects as anatomy of the nose and throat, electrocardiography, fractures, minor surgery, medicine, obstetrics, orthopedic surgery and pediatrics. Each carries a fee, and attendance for each course is limited. Special postgraduate facilities have been set up also under a grant from the Commonwealth Fund of New York. These will be considered in a subsequent report.

The New England Medical Center, consisting of the Boston Dispensary, the Boston Floating Hospital and Tufts College Medical School, was established seven years ago with the aid of the Bingham Associates Fund. It provides opportunities for postgraduate instruction of New England physicians. Only physicians from Maine have been able thus far to take advantage of these opportunities.

Boston University School of Medicine cooperates actively with the state society in its extension course program. The dean, Dr. Alexander S. Begg, is secretary of the Massachusetts Medical Society. Members of the faculties of Boston's three approved medical schools comprise a major portion of the society's extension course faculty.

The Boston Medical Library has been the home of the Massachusetts Medical Society since 1879. The library is the depository for periodicals, reprints and books received by the state society and by the *New England Journal of Medicine*. In company with other medical libraries of Boston, a cooperative plan to provide for nonduplication of reference and research material is being instituted. The annual library dues are $15.

## COLORADO

One standing committee and five special committees in the Colorado State Medical Society are concerned with medical education. Three of these, namely the committee on midwinter postgraduate clinics, the Rocky Mountain medical conference and the committee on cancer education, have been especially active.

The Midwinter Postgraduate Clinics have been held in Denver for three days each January from 1933 until 1937, when a December meeting was held instead of a January 1938 session. All physicians in Colorado and adjoining states are invited. A registration fee of $2 was charged last year. Clinics, symposiums, lectures, ward walks and clinical pathologic conferences characterized the graduate assemblies. Morning clinics were held in private hospitals or at the University of Colorado School of Medicine, with demonstrations by staff members. Afternoon and evening sessions took place in a downtown hotel, which was used as headquarters for the meeting. Local physicians, many of whom are members of the staff of the school of medicine, and five out of state speakers participated last year. Instructors are selected by the state society's committee, which is entirely responsible for the conduct of the meetings. Guest speakers are provided with travel and hotel expenses. This year Dr. G. M. Blickensderfer is chairman of the clinics' committee of five.

Subjects for discussion are chosen after questioning Colorado physicians as to their needs. Last year clinics on pediatrics, renal and prostatic disease, fractures, tumors and obscure fevers and a movie program devoted to neuropathology and neurosurgery featured the meetings. Three hundred and three physicians attended in December 1937, which was four times as many as registered in 1933. Of these, 102 came from outside Denver. In addition to physicians, sixty-two medical students and nurses registered at the December 1937 clinics. Registration represented forty-five cities and towns in Colorado and thirteen cities and towns in six other states.

The annual two day Spring Clinics of the Pueblo County Medical Society were started in 1934. They are held each April by the county medical society with the sponsorship of the Colorado State Medical Society. Each of four local hospitals has a representative on the clinic committee, with Dr. George A. Unfug as chairman. The local committee is assisted by the Committee on Postgraduate Clinics of the Colorado State Medical Society and selection of instructors is made jointly. Each hospital offers its facilities and provides a half day's program and each invites an out of state guest speaker. Local physicians show cases, give illustrative lectures and demonstrate procedures of value in practice. This year the differential diagnosis of pulmonary tuberculosis, the diagnosis and treatment of diaphragmatic hernia, hypothyroidism and symptoms and diagnosis in general medicine were the subjects of major interest. Programs are mailed to all physicians in Colorado and to others in the states of New Mexico, Kansas, Nebraska, Wyoming and Utah. The registration fee of $2 provides admission to three luncheons, a banquet and a smoker. One hundred and sixty-three physicians registered last April, ninety-three coming from outside Pueblo. Twenty-eight enrolled from Denver, and twenty-eight cities and towns and five states were represented.

The Western Slope Clinical Meeting was inaugurated and conducted by the Mesa County Medical Society at Grand Junction in April 1938 for physicians practicing on the western slopes of the Rocky Mountains. It will be held annually hereafter. The day's program was opened by the executive secretary of the Colorado State Medical Society. Lectures on obstetrics, anesthesia, diagnosis of heart disease and peptic ulcer, including treatment, round table discussion on obstetrics, and five motion pictures on surgical procedures comprised the program. All physicians in western Colorado and eastern Utah

were invited. Fifty registered, twelve counties in Colorado and three in Utah being represented.

The Rocky Mountain Medical Conference was organized in 1936 at the suggestion of Dr. George P. Lingenfelter, chairman of a committee of four members from the Colorado State Medical Society. It is the purpose of this conference, which is a joint effort of the state societies of Colorado, New Mexico, Wyoming and Utah, to foster discussion of problems in medicine and public health which are peculiar to this region. The medical society in each state has approved of the conference as a means of obtaining prominent educators to address the physicians of these states, which are so sparsely settled. The Colorado society acted as host for the first three day meeting held in Denver in July 1937, but no Colorado physicians participated in the program. It is planned to have similar meetings every two years, the next being scheduled for Utah in 1939.

Twenty out of state speakers discussed such subjects as gastro-enteric disease, cranial nerve lesions, syphilis, cancer, fractures, hand injuries, urologic diseases and obesity in children, endocrinology, ophthalmology, Rocky Mountain spotted fever, parasitic and infectious disease, chemical warfare injuries, aviation and automobile trailer problems in medicine and national legislation affecting physicians. From three to five round table luncheons were held each day in three hotels with guest speakers leading the discussions. Attendance at each luncheon was limited to fifty physicians. Ten scientific exhibits supplemented the program's illustrated lectures. Technical exhibits were shown by twenty-five firms at the hotel headquarters. The Denver Chamber of Commerce assisted in registration, the fee being $3. A local theater donated its auditorium for morning sessions to amplify the hotel facilities.

Seven hundred and eighty-seven physicians, 400 from Denver, registered for the conference. Twenty-five states and the District of Columbia were represented, six or more physicians coming from Wyoming, Utah, Texas, New Mexico, Kansas, Nebraska, and Illinois. Dr. Kenneth D. A. Allen was chairman of the conference executive committee, with representatives from the four cooperating states. Travel and hotel expenses, but not honorariums, were paid with funds derived from the commercial exhibits, donations from most of Colorado's county medical societies, special medical organizations and individuals. The city council of Denver and the Denver Convention and Tourist Bureau also contributed. Registration fees and the sale of luncheon and dinner tickets provided the remainder of the $6,550 collected, which was more than sufficient to finance the effort.

The committee on cancer education of the state medical society was formed in 1932 to supply component medical societies with teams of from three to five physicians for training their members in the early recognition and treatment of cancer. Since 1935 every society has been addressed one or more times by a physician or surgeon, pathologist and radiologist on cancer of the cervix, breast and/or gastro-enteric tract. Eighteen of the twenty-eight component societies in the state were visited last year. Dr. Charles B. Kingry, acting chairman of the committee, with the aid of eight other members and special counsel, is preparing a handbook on the diagnosis and treatment of cancer for distribution to practicing physicians. An outline of examination procedures has been sent to members of the state society urging complete examinations in all suggestive cases.

The Medical Society of the City and County of Denver established a medical library in 1910 by effecting a merger with the Colorado Medical Library and the Denver Academy of Medicine Library. Sixteen hundred volumes were added by the Colorado group, and the academy supplied 6,000 volumes in addition to cash and securities. The Colorado State Board of Health earlier had contributed about 2,000 volumes to the academy. The state medical society and private contributions made possible subscription to foreign and domestic journals. These were supplemented by donations from members of the profession. The library is now jointly supported by the county and state medical societies, and its facilities are available to any member of the state society. It is housed in the annex to the Metropolitan Building, Denver, and is maintained by dues of members plus a $500 annual appropriation from the state society. All books and periodicals received by the state society are deposited, the total number of texts on hand in January 1938 being 14,983. Two hundred and sixty-three periodicals are received currently. During 1937, 9,029 patrons, more than three fourths of them physicians, visited the library, borrowing 8,105 items.

The Colorado State Board of Health Division of Maternal and Child Health sponsored postgraduate courses in obstetrics and pediatrics in collaboration with the committee advisory to the department of health of the state society, of which Dr. J. W. Amesse is chairman. These courses were given in the northeastern and northern parts of the state during March and April 1937. Three pediatricians and three obstetricians gave ten two hour illustrated lectures over five weeks in four towns. Five lecture and clinic sessions were devoted to obstetrics and five to pediatrics. These were given from 4 to 10 p. m. on one day each successive week, one hour being allowed for dinner. The instructors and subjects were suggested by the Children's Bureau of the United States Department of Labor; two of the lecturers were members of the staff of the University of Colorado School of Medicine and four were faculty members of out of state universities. Courses were announced by post cards and letters distributed by the secretary of the state board of health, Dr. R. L. Cleere. Local physicians in the six counties where courses were given were responsible for local arrangements. They were invited to present interesting cases and to suggest problems for discussion. Of the 179 physicians licensed in this area, 114 enrolled, including some from five adjoining counties. The attendance at each meeting varied from twelve to eighteen, including a few public health nurses and medical students. There were no registration fees, the course being financed with federal funds.

The University of Colorado School of Medicine, in cooperation with the extension division of the university, formerly sent members of the faculty throughout the state to address component medical societies. This effort has now been taken over by the state medical society with the continued cooperation of the school of medicine. On request, members of the faculty are available for graduate programs. In the six years prior to 1933, annual clinics were given for medical graduates. At these clinics the average registration of physicians residing outside of Denver was 127, and in 1932 it was 106, thirty-one of whom came from towns with populations of less than 5,000. The school of medicine's annual clinics are now succeeded by the state society's midwinter clinics.

At the last annual meeting of the state medical society, three opening morning sessions were devoted to clinical pathologic conferences. Round table luncheon discussions were held each day at which a guest speaker presided. Six hundred and nine physicians of the 1,135 members of the state society attended. There are 1,923 physicians registered in Colorado. Approximately 85 per cent of the physicians practicing in Colorado are members of the state medical society.

## UTAH

The committee on medical education and hospitals of the Utah State Medical Association consists of six physicians of Salt Lake City and six from other sections of the state. Dr. L. L. Daines, dean of the University of Utah School of Medicine, Salt Lake City, is chairman. During the first half of 1938 a member of the faculty of the medical school addressed each of six component medical societies throughout the state. Clinical pathologic conferences are held in four of the hospitals in Salt Lake City and in one Ogden hospital which members of the respective staffs may attend. The university library is used as a depository for books and periodicals received by the Salt Lake County Medical Society, which spends $500 a year for maintenance. In turn, physicians may use the complete facilities of the medical school and general university library. The anatomic laboratory of the medical school provides cadavers for physicians desiring to perfect their operative technic or who are anxious to obtain additional basic science training.

At the 1937 annual meeting of the Utah State Medical Association an out of state obstetrician and pediatrician each conducted four illustrated lectures during two days. The program was financed with federal funds and was sponsored jointly by the Utah State Board of Health. Of 175 physicians who registered, sixty-five were from Salt Lake City and the remainder came from all but four of the twenty-nine counties of the state.

This year an out of state pediatrician is lecturing and giving infant conference demonstrations throughout Utah. From June 21 to August 20, fourteen or fifteen centers in five of the six health districts of the state are being visited. Health officers make local arrangements in each section. Personal conferences with physicians, consultations on request and lectures before component medical societies are included. This effort is sponsored by the Division of Maternal and Child Health of the Utah State Board of Health and is financed with federal funds.

A representative from the division of venereal disease control of the state board of health met with the committee on syphilis and venereal disease of the state medical association in 1936 to consider a program for informing the public and the profession regarding advances in the knowledge of venereal diseases. Since then the board of health has conducted a public education campaign, but as yet similar consideration of the profession has not been given.

The annual meetings of the state medical association were attended by 310 physicians in 1937 and 316 in 1936. There are 443 members of the 567 physicians licensed in Utah.

# OFFICIAL NOTES

## RADIO BROADCASTS

The fourth series of programs broadcast in dramatic form portraying fictitious but typical incidents of significance in relation to health by the American Medical Association and the National Broadcasting Company entitled "Your Health" will begin Wednesday October 19 and run consecutively for thirty-six weeks. The program will be broadcast over the Blue network of the National Broadcasting Company each Wednesday at 2 p. m. eastern standard time (1 p. m. central standard time, 12 noon mountain time, 11 a. m. Pacific time).

These programs will be broadcast on what is known in radio as a sustaining basis; that is, the time is furnished gratis by the radio network and local stations and no revenue is derived from the programs. Therefore local stations may or may not take the program, at their discretion, except those stations which are owned and operated by the National Broadcasting Company.

The programs to be broadcast in the first group, together with their dates and their topics, are as follows:

October 19, What is Health?
October 26, Growing Strong.
November 2, Seeing and Hearing Well.
November 9, Healthier Boys and Girls.

The following is a list of the stations connected with the Blue network of the National Broadcasting Company, but no assurance can be given as to how many of these stations will broadcast the program "Your Health":

*Basic Blue Network*

| | | | | | |
|---|---|---|---|---|---|
| WJZ | New York | KDKA | Pittsburgh | KSO | Des Moines |
| WBZ | Boston | WHK | Cleveland | KOIL | Omaha |
| WBZA | Springfield | WSPD | Toledo | WREN | Kansas City |
| WEAN | Providence | WXYZ | Detroit | WLW | Cincinnati |
| WICC | Bridgeport | WOWO | Fort Wayne | WCKY | Cincinnati |
| WFIL | Philadelphia | WENR-WLS | Chicago | WSAI | Cincinnati |
| WBAL | Baltimore | KWK | St. Louis | WRTD | Richmond |
| WMAL | Washington | WMT | Cedar Rapids | WABY | Albany |
| WSYR | Syracuse | WTCN | Minneapolis-St. Paul | WJTN | Jamestown, N.Y. |
| WHAM | Rochester | | | WLEU | Erie |
| WEBR | Buffalo | | | | |

*Supplementary Facilities*

| | | | | | |
|---|---|---|---|---|---|
| WFEA | Manchester, N.H. | WSOC | Charlotte | WIBA | Madison |
| WBRE | Wilkes-Barre | WFBC | Greenville | KVOD | Denver |
| WSAN | Allentown, Pa. | WWNC | Asheville | KLO | Ogden |
| WORK | York, Pa. | WIS | Columbia | KIDO | Boise |
| WCOL | Columbus, O. | WCSC | Charleston | KGIR | Butte |
| WGL-WOWO | Fort Wayne | WJAX | Jacksonville | KPFA | Helena |
| WOOD | Grand Rapids | WFLA-WSUN | Tampa | KGHL | Billings |
| WBOW | Terre Haute | WIOD | Miami | KSEI | Pocatello, Ida. |
| WGBF | Evansville | WMC | Memphis | KTFI | Twin Falls, Ida. |
| WEBC | Duluth-Superior | WSB | Atlanta | KGO | San Francisco |
| KSOO-KELO | Sioux Falls, S.D. | WBRC | Birmingham | KECA | Los Angeles |
| KANS | Wichita | WJDX | Jackson | KEX | Portland, Ore. |
| WTAR | Norfolk | WSMB | New Orleans | KJR | Seattle |
| WPTF | Raleigh | WALA | Mobile | KGA | Spokane |
| | | WROL | Knoxville | KFBK | Sacramento |
| | | WAVE | Louisville | KWG | Stockton |
| | | WSM | Nashville | KMJ | Fresno |
| | | WTMJ | Milwaukee | KERN | Bakersfield |

# WOMAN'S AUXILIARY

The following officers have been elected by the Woman's Auxiliary to the American Medical Association for 1938-1939:

Officers:

President—Mrs. Charles C. Tomlinson, 5215 Jackson Street, Omaha.

President-Elect—Mrs. Rollo K. Packard, 6901 Paxton Avenue, Chicago.

First Vice President—Mrs. Frank N. Haggard, 615 East Olmos Drive, San Antonio, Texas.

Second Vice President—Mrs. David W. Thomas, 112 West Main Street, Lock Haven, Pa.

Third Vice President—Mrs. L. S. Merrill, 2761 Harrison Boulevard, Ogden, Utah.

Fourth Vice President—Mrs. J. R. Westaby, 621 Washington Avenue North, Madison, S. D.

Treasurer—Mrs. E. E. Fisher, Multnomah County Hospital, Portland, Ore.

Recording Secretary—Mrs. James A. Downing, 1246 Forty-Sixth Street, Des Moines, Iowa.

Corresponding Secretary—Mrs. James M. Woodward, 2132 South Twenty-Fourth Street, Lincoln, Neb.

Directors, one year—Mrs. Augustus S. Kech, 1221 Twelfth Avenue, Altoona, Pa.

Mrs. Carl A. Surran, 5 North Brunswick Avenue, Margate City, N. J.

Mrs. John W. Burns, 309 East Broadway, Cuero, Texas.

Mrs. Leslie J. Paul, 259 Douglas Street, Salt Lake City.

Directors, two years—Mrs. J. C. Geiger, 50 Ventura Avenue, San Francisco.

Mrs. E. W. Veal, 1936 San Marco Boulevard, Jacksonville, Fla.

Mrs. R. E. Mosiman, 2706 Tenth Avenue North, Seattle.

Chairmen of Standing Committees:

Archives—Mrs. Robert B. Homan, 1837 Grandview, El Paso, Texas.

Exhibits—Mrs. Ily R. Beir, 114 South Virginia Avenue, Atlantic City, N. J.

Finance—Mrs. James Blake, Hopkins, Minn.

Historian—Mrs. E. A. Barnes, Albany, Ky.

Hygeia—Mrs. James D. Lester, 268 Twenty-First Avenue South, Nashville, Tenn.

Legislation—Mrs. Arthur A. Herold, 1166 Louisiana Avenue, Shreveport, La.

Membership Award—Mrs. Herbert B. Henkel, 2135 Wiggins Avenue, Springfield, Ill.

Parliamentarian—Mrs. Rogers N. Herbert, Franklin Road, Nashville, Tenn.

Press and Publicity—Mrs. James P. Simonds, 25 East Walton Street, Chicago.

Printing and Supplies—Mrs. E. D. Lamb, Klamath Falls, Ore.

Program—Mrs. V. E. Holcombe, 1635 Quarrier Street, Charleston, W. Va.

Public Relations—Mrs. Henry Raile, 19 South Wolcott Avenue, Salt Lake City.

Revisions—Mrs. James F. Percy, 1030 South Alvarado Street, Los Angeles.

# MEDICAL ECONOMIC ABSTRACTS

## EDUCATORS STUDY EDUCATION

Because some one is always comparing education and medicine, the conclusions of educators on our present system of education deserve some attention. The National Education Association of the United States and the American Association of School Administrators joined in appointing an Educational Policies Commission, which has recently presented its conclusions.[1] It is interesting to note at how many points the educational and the medical profession agree.

The educators criticize our present educational system because it has failed "to adapt the curriculum of the schools to the greatly varied abilities, interests and vocational outlooks of the students in attendance." In other words, pupils, like patients, need attention to their individual characteristics rather than mass treatment.

The invasion of business by the schools is criticized. Institutions that "are organized on a proprietary basis and are run for profit . . . have no place in our system of education."

The attitude of the educators that schools should not invade the field of the medical profession is shown in the following comment:

"Another example of an important service lying outside of the range of school activities is that of medical or surgical service. The schools may properly inquire concerning the physical well-being of their pupils, but the correction of remediable defects or the medical and surgical services should lie within the province of the public health agency or the private physician, surgeon or dentist."

Teachers and physicians are agreed in their opposition to uniform national programs. The report says:

"The nation is committed to a decentralized system of administration and control in education. . . .

"Centralization in the control, administration and financing of education is very apt to lead to a mediocre school system and a lack of progressive development of the program of public education."

Even when federal aid is urged for certain phases of education, this is accompanied by opposition to national control of education. The system of federal control based on the "matching by the state of the moneys distributed to them by the federal government" is denounced as an "insidious type of control."

Finally, the educators, no less than the members of the medical profession, insist that educational matters and even "administrative details should always be left to the professional executive."

## SICKNESS INSURANCE IN NORWAY

The provisions of the sickness insurance law in Norway are described in the Monthly Labor Review of the United States Department of Labor (**46**:1122 [May] 1938) on the basis of data furnished by the American consulate at Oslo, Norway.

The basic law establishing the present system was enacted in 1930 and has been revised five times since, the latest revision being made on June 17, 1937. The law provides for both compulsory and voluntary insurance. The administration is largely in the hands of municipal funds, of which there were 759 in 1936; there were also thirty-four recognized private funds. All wage earners of 15 years of age or over with an annual income of less than 6,000 kroner (a little less than $1,500) must belong to an insurance fund or an authorized sick-benefit fund. Of the total contributions required, the insured pays six tenths, the employer one tenth, the state two tenths and the municipality one tenth. The contributions of individuals vary according to six wage classes, and the cash benefits vary in the same manner.

Medical care may be given either in the form of free medical attendance by physicians with whom the funds have contracts or as a refund to the members for medical care in accordance with rates fixed by the crown. The members have freedom of choice of physician. If the fee charged is higher than that allowed by the insurance funds, the member must pay the difference between the authorized fee and that charged by the physician consulted. All compulsory and voluntary members of the sickness insurance fund and their dependents, including children and foster children under 16 years of age, are entitled to benefits regardless of age.

The central administrative body is a state insurance institution under the direction of a board of five members. The expenses of the institution in connection with the administration of sickness insurance are paid by the state. In 1936 there were 896,553 members of sickness insurance funds, of whom 755,084 were under the compulsory plan and 141,469 were voluntary members. In 1936 there were 249,791 cases of sickness among these members for which sickness benefits were paid, which works out at an average of about one case of sickness for every 3.5 persons.

## MATERNAL HEALTH AND THE ILLINOIS STATE MEDICAL SOCIETY

When the Social Security Act became a law in 1935 there were three sections referable to health, namely maternal and infant welfare, aid to crippled children and the expansion of the general health program. In all of these divisions the United States Children's Bureau and the United States Public Health Service, charged with their administration, created advisory committees of medical and public health authorities and encouraged the several states to procure active cooperation from the state medical societies. How such cooperation can be worked out is well exemplified by the report of the Maternal Welfare Committee of the Illinois State Medical Society.[1] In Illinois the governor appointed the Committee of Maternal Welfare, and the state director of public health, the chief of the state department bureau of child welfare and public health nursing and the chairman of the educational committee of the Illinois State Medical Society were members, under the chairmanship of the professor of obstetrics at the University of Illinois College of Medicine.

Under this committee refresher courses in obstetrics and pediatrics were arranged to be presented before many county medical societies under the supervision of the educational committee of the state medical society. A field consultant for the Committee of Maternal Welfare was appointed, and he arranged with many county medical societies for the development of these courses. In addition, postgraduate courses in obstetrics and pediatrics were conducted at the University of Illinois College of Medicine during the summer of 1937. The state medical society Maternal Welfare Committee was developed with one member from each of the eleven councilor divisions.

The state medical society Maternal Welfare Committee functioned under four major objectives, namely the refresher courses, an educational program for the public on antepartum care, sponsorship by organized medicine of the health activities under the Social Security Act and furtherance of the summer postgraduate courses. District meetings were held in each district and efforts were made to bring to the lay public the true facts about maternal mortality in the United States as compared with other countries. In this connection it was pointed out that, in the United States, deaths occurring during the puerperal state are invariably classed as maternal deaths including criminal abortions, deaths from intercurrent infections during pregnancy and deaths due to other causes, whereas in many countries the actual causes of such deaths are properly reported under their several classifications.

The Committee on Maternal Welfare is embarked on an eight point program including emphasis on adequate antepartum care, greater attention to eugenics rather than to birth control,

1. The Structure and Administration of Education in American Democracy, by the Educational Policies Commission of the National Education Association of the Untied States and the American Association of School Administrators, Washington, D. C., 1938.

1. Illinois M. J. **74**: 44 (July) 1938.

refresher courses, studies on the preventability of maternal, fetal and early infant deaths, in Illinois a physicians' speakers' service for lay groups in each county, public meetings in each county, routine Wassermann tests for all prospective mothers and cooperation with women's groups.

This program is projected over a five year period and it is believed that it will result in better maternal and infant health in the state of Illinois with a maximum participation by practicing physicians and with the cooperation of official health agencies and citizens' groups, especially women's groups.

# Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

## ALABAMA

**Hospital News.**—Dr. Quitman U. Newell, St. Louis, conducted a gynecologic operative clinic at the Hillman Hospital, Birmingham, August 1.

## ARKANSAS

**Society News.**—The Southeast Arkansas Medical Society was recently addressed at McGehee by Drs. Lee Vallette Parmley on work for crippled children and Grady W. Reagan, diagnosis of diseases of the upper urinary tract; both are from Little Rock. There was also a discussion on the study of medical care.——At a meeting of the Lawrence County Medical Society in Hardy recently the speakers included Drs. Hubert K. Turley, Memphis, Tenn., on pyelitis; John J. Monfort, Batesville, local anesthesia, and John L. Jelks, Memphis, rectal fistulas.——Drs. Davis W. Goldstein and Everett C. Moulton, both of Fort Smith, discussed syphilis and syphilitic manifestations in ophthalmology respectively before the Benton County Medical Society in Rogers August 11.——At a meeting of the Independence County Medical Society in Batesville August 8 Dr. Finis Q. Wyatt, Corpus Christi, Texas, spoke on "Acute Suppurative Empyema."——Dr. Clyde D. Rodgers, Little Rock, discussed antepartum care before the Fourth Councilor District Medical Society in Warren August 18.

## CALIFORNIA

**Society News.**—The staff of the Weimar Joint Sanatorium, Weimar, presented a symposium on compression therapy in the treatment of tuberculosis at a recent meeting of the Placer County Medical Society.——The Ventura County Medical Society was addressed recently by Dr. Carl E. Ebert, Los Angeles, on "Pitfalls for the General Practitioner in the Practice of Urology."——At a dinner meeting of the Hollywood Academy of Medicine in Hollywood, August 11, Capt. Basil Webb, big game hunter and adventurer, spoke on "Fetishes, Facts and Fancies of Savage Medicine."——Dr. Ko K. Chen, Indianapolis, addressed a special meeting of the San Francisco County Medical Society September 15 on "Digitalis-like Preparations." The society was addressed September 13 by Drs. William L. Rogers on "Tuberculous Bronchitis—Its Role in Collapse Therapy"; George B. Miller, "Early Diagnosis and Control of Tuberculosis," and Sidney J. Shipman, "Pneumothorax and the General Practitioner"; all are of San Francisco.——At a meeting of the Los Angeles Society of Neurology and Psychiatry September 21, Drs. Rupert B. Raney and David L. Reeves, Los Angeles, discussed "Acute Pneumococcus Metastatic Spinal Epidural Abscess" and "Glioma of the Optic Nerve" respectively.

**Laboratory for Study of Sylvatic Plague.**—The University of California will establish a laboratory for sylvatic plague with a gift of $24,000 from the Rosenberg Foundation of San Francisco. Fourteen thousand dollars will be used to construct a building and the remainder for research and personnel. The laboratory will be staffed by the Hooper Foundation for Medical Research. Work will be concentrated on rodent fleas. Both the state and the university have been active in the campaign against sylvatic plague for years. Interested agencies have formed a Sylvatic Plague Committee, which has devoted itself to the collection of evidence of sylvatic plague everywhere on the American continent and is taking measures to combat it. Antiplague serum is being kept constantly on hand at the Hooper Foundation. Four nonfatal human cases have been bacteriologically proved thus far. The Hooper Foundation has counted thirteen rodents and rodent varieties that suffer from spontaneous plague, the list including squirrels, marmots, chipmunks, prairie dogs, mice and rats. The West Coast became infected in the course of the pandemic of 1894, which originated in Hongkong. It is assumed that rats conveyed the seed to the shores of California and spread it to the squirrels. It has now reached Montana and appears to be working eastward.

## CONNECTICUT

**Personal.**—Dr. William Sherman Randall has been appointed health officer of Shelton to complete the unexpired term of the late Dr. J. Eugene Black.

**Childs Memorial Research Fund.**—The major portion of the income of the Jane Coffin Childs Memorial Fund for Medical Research will be used for the next three years to finance a study of cancer at Yale University, it was announced in the fund's first annual report. In addition, grants-in-aid have been and will be made for cancer research in other institutions in this country and abroad. The primary purpose of the fund at present is to support research into the causes, origins and treatment of cancer, with emphasis on the causes and origins. Therapeutic investigations have been considered from the point of view of their contribution to knowledge of causes and origins. When the fund was established in 1937 the amount of the principal was appraised at $3,343,556.

## FLORIDA

**Society News.**—Dr. James H. Putman, Miami, discussed "Pain in the Right Hypochondrium, Some Factors in Its Production," before the Dade County Medical Society August 2.——At a meeting of the DeSoto-Hardee-Highlands County Medical Society in Sebring recently Dr. Allen A. Poucher, Wauchula, discussed symbiosis.

**Personal.**—Dr. James M. Hoffman, Pensacola, president of the Escambia County Medical Society, presented Dr. Juriah Harris Pierpont, Pensacola, with a scroll signed by members of the society, August 2, to observe his completion of fifty years' practice in the county.——Dr. Henry C. Lochte, Bay Pines, has retired as chief of the outpatient division at the Veterans' Administration Facility, it is reported; he has held the position since 1933.——Dr. James Maxey Dell Sr., Gainesville, has been appointed district deputy grand exalted ruler of the Benevolent and Protective Order of Elks for the Florida north area.

## GEORGIA

**Personal.**—Dr. Luther A. Brendle, Clinton, Tenn., has been appointed health officer of Dodge County, succeeding Dr. Johnnie L. Gallemore, Eastman, resigned.——Dr. Frank K. Boland has been elected president of the Atlanta Historical Society.

**Chattahoochee Valley Meeting.**—Dr. John S. Turberville, Century, Fla., was elected president of the Chattahoochee Valley Medical Association at its annual meeting at Radium Springs, Albany, July 14. Drs. Guy J. Dillard, Columbus, and Clarence R. Bennett, Eufaula, Ala., were selected as vice presidents. Dr. Frank K. Boland, Atlanta, will serve two more years to complete his five year term as secretary-treasurer. Dr. James G. Lyerly, Jacksonville, Fla., delivered the W. J. Love memorial address on "Prefrontal Lobotomy."

## ILLINOIS

**Society News.**—The Henry County Medical Society was addressed in Kewanee September 8 by Dr. Charles E. Galloway, Evanston, on obstetrics. A paper on pediatrics was read by Dr. John A. Bigler, Highland Park.——Dr. M. Herbert Barker, Chicago, discussed "Nephritis and Edema" before the Kankakee County Medical Society at Kankakee September 8.——At a meeting of the county medical society at Effingham, September 13, Dr. Frank Deneen, Bloomington, spoke on "Diagnosis and Medical Treatment of Liver and Gallbladder Conditions."——Dr. Herbert E. Schmitz, Chicago, discussed gynecology before the Coles-Cumberland County Medical Society at Mattoon September 14.——The Marion County Medical Society was addressed at Centralia September 15 by Dr. Arthur H. Conley, Chicago, on "Injuries to and Fracture of the Bones."——At a meeting of the Peoria

County Medical Society at Peoria September 20 Drs. Ford K. Hick and Conrad S. Sommer, Chicago, will discuss various aspects of internal medicine.——Dr. Raymond A. Tearnan, Decatur, will address the Christian County Medical Society September 21 on "Endocrine Factors in Various Gynecologic Disorders."——A symposium on pediatrics and obstetrics will be sponsored by the Joe Davis and Carroll County Medical Societies at Elizabeth September 21; the speakers will be Drs. Arthur H. Parmelee, Oak Park, and William F. Mengert, Iowa City, on "Diseases of the Newborn" and "Treatment of Prolonged Labor" respectively.

### Chicago

**Dr. Moss Retires.**—Dr. Daniel B. Moss, chief medical officer of the Chicago, Burlington and Quincy Railroad since 1924, retired on pension September 15 after forty years' service with the road. He will be succeeded by Dr. Onis H. Horrall, general surgeon for the line, who has been appointed chief surgeon in charge of all surgical work of the company. Born in Palmyra, Mo., Dr. Moss graduated at the Missouri Medical College, St. Louis, in 1896 and engaged in the private practice of medicine in Hannibal, Mo. He became associated with the medical department of the Burlington in St. Joseph, Mo., June 7, 1898. In 1903 he was transferred to the general headquarters at Chicago and in April 1924 was appointed chief medical officer. Dr. Horrall graduated at Rush Medical College in 1920 and entered private practice in Casper, Wyo. He was appointed division surgeon for the Burlington at Sheridan, Wyo., in 1922, moving to Chicago in 1924. He has served as general surgeon for the Burlington since Oct. 13, 1937. Dr. Raymond B. Kepner, who joined the company's medical department in St. Joseph, Mo., in January 1920, has been appointed medical officer of the company and medical director of the relief department. He graduated at Rush in 1917.

## INDIANA

**Division of Nutrition Established.**—The bureau of maternal and child health of the state department of health established a division of nutrition August 1 with Miss Estelle Nesbitt, New Richmond, in charge. For the present it is planned to confine the activities of the nutrition service for the most part to cooperation with the demonstration branch of the dental health program in district health unit number 4, which includes the counties of Switzerland, Ohio, Dearborn, Ripley and Jefferson. During November nutrition institutes will be conducted for public health nurses. Work of the new division will include study of the prevalence of nutritional diseases in the state and cooperation with local health agencies in solving the nutritional needs of the community. Special attention will be paid to expectant mothers. Representatives of various agencies in the state make up an advisory council to the director of new division.

## IOWA

**Society News.**—At a meeting of the Upper Des Moines Medical Society in Okoboji August 4, the speakers were, among others, Drs. William D. Paul, Iowa City, on "Recent Advances in the Treatment of Diabetes"; Albert S. Welch, Kansas City, Mo., "Intestinal Protozoa"; Archibald F. O'Donoghue, Sioux City, "Fractures of the Hip Treated by Internal Fixation"; Lealdes M. Eaton, Rochester, Minn., "Pain Characteristic of Various Neurologic Diseases"; Hiram Winnett Orr, Lincoln, Neb., "Prevention and Control of Wound Infection and Interpretation of Asepsis," and Louis A. Buie, Rochester, Minn., "Anal Pruritus."

## KANSAS

**Society News.**—The Sedgwick County Medical Society held its twelfth annual golf tournament September 16; a new trophy was presented this year by Mr. Mac Cahal, Chicago, formerly executive secretary of the society and now executive secretary of the Inter-Society Committee for Radiology.——Dr. Bertrand I. Krehbiel, Topeka, discussed a case of tetanus with recovery in a child 21 months old before the Shawnee County Medical Society in Topeka September 6.

## KENTUCKY

**State Medical Meeting in Louisville.**—The Joseph N. McCormack Memorial Meeting of the Kentucky State Medical Association will be held in Louisville October 3-6. A feature of the meeting will be the unveiling of a plaque and dedication of the new building of the state board of health as a memorial to the late Dr. McCormack, known as "the father of public health, preventive medicine and medical organization in Kentucky." The guest speakers will be:

Dr. Frank H. Lahey, Boston, Management of Lesions of the Colon and Rectum.
Dr. Ernest E. Irons, Chicago, Lobar Pneumonia.
Dr. Daniel C. Elkin, Atlanta, Ga., Cholecystitis—When and If Operable.

Dr. Harry Stack Sullivan, New York, president of the William Alanson White Psychiatric Foundation, will be the speaker at the annual banquet Wednesday evening, when the president of the association, Dr. William E. Gardner, Louisville, will give his official address. Dr. Clark Bailey, Harlan, will give the annual oration in medicine and Dr. Francis M. Massie, Lexington, the oration in surgery. The annual golf tournament will be held at the Louisville Country Club Monday October 3; there will also be a trapshooting contest at the Highland Park Gun Club the same day.

## MAINE

**Society News.**—At a meeting of the Aroostook County Medical Society in Houlton recently, the speakers included Dr. Delmer Allan Craig, Bangor, on "The Standardized Hospital and Its Benefit to Doctor and Patient."——Among others, Dr. Robert H. Aldrich, Boston, addressed the Piscataquis, Aroostook, Somerset, Kennebec and Penobscot county medical societies at a joint meeting July 21; his subject was "Aniline Dye Treatment of Burns."

## MASSACHUSETTS

**Dr. Chadwick Resigns as State Health Commissioner.**—Dr. Henry D. Chadwick, since 1933 health commissioner of Massachusetts, has resigned to become medical director of the Middlesex County Sanatorium at Waltham, according to the *New England Journal of Medicine*. A graduate of Harvard University Medical School, Dr. Chadwick practiced in Waltham from 1896 to 1905, then was superintendent of the Vermont Sanatorium for Tuberculosis, Pittsford, 1907-1909, holding a similar post with the Westfield (Mass.) State Sanatorium for tuberculous children from 1909 to 1929, when he went to the Detroit department of health as tuberculosis controller. He served as president of the American Sanatorium Association in 1930, and of the Michigan Tuberculosis Association, 1932 and 1933.

## MICHIGAN

**Examinations for State Positions.**—The Michigan Civil Service Department announces that examinations will be held in the immediate future for several medical positions. The positions open are resident institution physician, resident hospital roentgenologist, hospital physician, sanatorium physician and public health physician, at salaries ranging from $150 to $400 a month, less maintenance where it is provided. Those interested are urged to communicate at once with the civil service department, 508 North Grand Avenue, Lansing, for application blanks and further information as to the requirements.

## MISSOURI

**Annual Fall Conference.**—The sixteenth annual fall clinical conference of the Kansas City Southwest Clinical Society will be held at the Municipal Auditorium, Kansas City, October 3-6. Guest speakers will include:

Dr. Thomas Leon Howard, Denver, Colo., How Should the General Physician and Surgeon Evaluate Bladder Symptoms in His Patients?
Dr. William J. Dieckmann, Chicago, Treatment of Nonconvulsive Toxemias of Pregnancy.
Dr. George T. Pack, New York, Indications for Surgery and Indications for Irradiation in the Treatment of Cancer.
Dr. Isidor S. Ravdin, Philadelphia, Problems of Long Standing Gallstone Disease.
Dr. William D. Sansum, Santa Barbara, Calif., The Causes, Dangers and Treatment of Overweight.
Dr. Elmer L. Sevringhaus, Madison, Wis., Diagnosis of Causes of Menstrual Disturbances.
Dr. Lawrence Reynolds, Detroit, Passage of Foodstuffs Through the Gastrointestinal Tract as Determined by Chemical and Roentgenologic Methods.
Dr. Frank R. Ober, Boston, Management of Lame Joints as a Result of Trauma.
Dr. Chester A. Stewart, Minneapolis, Evolution of Tuberculosis in Children.
Dr. Louis J. Karnosh, Cleveland, Neuritis, Neuralgia and Neurosis.
Dr. James B. Costen, St. Louis, Mandibular Joint Syndrome.
Dr. Grady E. Clay, Atlanta, Ga., Pathologic Changes in the Fundus Oculi in Essential and Malignant Hypertensive Disease.
Dr. Arthur E. Hertzler, Halstead, Kan., The Goiter Heart.

Round table luncheons will be held each day. A feature of the meeting Monday evening will be the discussion of a "mys-

tery case." The history, physical examination and laboratory findings of a baffling case, taken from the records of a large eastern hospital, will be published in the program issue of the *Kansas City Medical Journal*. Every one is urged to read it carefully. A group of selected "key" men will be asked to occupy seats on the platform of the Little Theater. In addition, any physician present will be allowed to discuss the case presented. No one in the entire audience, except the chairman, will know the final diagnosis of the case. Men from the various specialties will be called from the audience for discussion.

## MONTANA

**Personal.**—Dr. Harry V. Gibson, health officer of the Eau Claire, Wis., county health unit, has been appointed health officer of Great Falls and Cascade County, it is reported.

## NEVADA

**State Medical Meeting at Reno.**—The thirty-fifth annual meeting of the Nevada State Medical Association will be held in Reno September 23-24 at the Bowers Mansion, under the presidency of Dr. Harry W. Sawyer, Fallon. The speakers will be:

Dr. Albert H. Rowe, Oakland, Calif., Chronic Allergy in Medical Practice.
Dr. Alson R. Kilgore, San Francisco, Postoperative Distention—Prevention and Treatment.
Dr. Miley B. Wesson, San Francisco, Kidney Infections—Pyelographic Diagnosis.
Dr. Ruggles A. Cushman, Talmage, Calif., Mental Disease as Met in General Practice.
Dr. Philip King Brown, San Francisco, Complications of Pneumonia.
Dr. Ernst Gehrels, San Francisco, Gastric and Duodenal Ulcer—The Case Against Gastro-Enterostomy.
Dr. William H. Daniel, Los Angeles, Common Proctologic Disorders.
Dr. Albert R. Da Costa, Reno, New Anesthetics and Methods; Carbon Dioxide Absorption with Cyclopropane.
Dr. Lemuel R. Brigman, Reno, Congenital Syphilis: Intrascalp Method of Administering Sulfarsphenamine.

## NEW JERSEY

**Society News.**—Dr. Harold D. Harvey, New York, will address the Bergen County Medical Society, Englewood, September 20, on "Use and Abuse of Sulfanilamide."——Dr. William T. Lemmon, Philadelphia, addressed the Gloucester County Medical Society, Woodbury, September 15, on "Common Diseases Relieved by Surgical Operations on the Sympathetic Nervous System," and Dr. Edward Zeh Hawkes, Newark, president-elect of the Medical Society of New Jersey, "The Objectives and Administrative Policies of the Medical Society of New Jersey."

**Opening of Squibb Research Institute.**—The new Squibb Institute for Medical Research at New Brunswick will be officially opened October 11 with a special program. Mr. Carleton H. Palmer, president of E. R. Squibb and Sons, will give an address of welcome and Dr. John F. Anderson, director of the biologic laboratories, an address on the institute. Dr. George A. Harrop, newly appointed director of the institute, will introduce the following guest speakers:

Dr. George R. Minot, Boston, Clinical Investigation.
Dr. Russell M. Wilder, Rochester, Minn., Industrial Laboratories and Clinical Research.
August Krogh, professor of animal physiology, University of Copenhagen, Denmark, Biology and Medicine in Cooperation.
Dr. Abraham Flexner, Princeton, N. J., The Usefulness of Useless Knowledge.

## NEW YORK

**District Meeting.**—The Seventh District Branch of the Medical Society of the State of New York will hold its annual meeting at the Oak Hill Country Club, Rochester, September 22. Dr. William N. MacArtney, Fort Covington, author of "Fifty Years a Country Doctor," will make the principal address, and the film "Birth of a Baby" will be shown. The afternoon session will be made up of panel discussions with the following subjects and leaders: Drs. James H. Sterner, Rochester, "Rational Drug Therapy"; Abraham H. Aaron, Buffalo, "Gastrointestinal Problems"; Albert D. Kaiser, Rochester, "Problems in Children," and David B. Jewett, Rochester, "Pneumococcic Infections."

### New York City

**Health Safeguards at World's Fair.**—Plans for health and medical care at the New York World's Fair include ten first aid stations, a corps of physicians and surgeons, about 100 nurses, ten ambulances and a mobile x-ray unit, according to an announcement.

**Personal.**—Thomas J. Duffield, registrar, bureau of records, New York City Department of Health, has been appointed a delegate to the International Commission for the Decennial Revision of the International Nomenclature of Diseases, which opens in Paris October 3.

**Attempt to Curb Boat Whistles.**—The Maritime Association of the Port of New York recently adopted a resolution authorizing its committee on rivers, harbors and piers to communicate with owners and operators of craft in the harbor to eliminate unnecessary whistling on their vessels and excessive noise along the waterfront.

**University News.**—The Crocker Institute for Cancer Research of Columbia University has moved from its building at One Hundred and Sixteenth Street and Amsterdam Avenue to new quarters on two floors of the school of medicine at the Columbia-Presbyterian Medical Center, One Hundred and Sixty-Eighth Street and Fort Washington Avenue. The institute had been in the old building since its founding in 1913.

**Symposium on Ulcerative Colitis.**—The department of medicine, New York Post-Graduate Medical School, announces a symposium on chronic ulcerative colitis to be held September 23 at the Erdmann Auditorium. Dr. Philip Manson-Bahr, London School of Hygiene and Tropical Medicine, will be the guest of honor and will speak on "Differential Diagnosis of Ulcerative Colitis and the Dysenteries." Other guests on the program will be Drs. Moses Paulson, Baltimore, speaking on "Diagnostic Methods in Ulcerative Colitis," and Richard B. Cattell, Boston, on "Surgical Treatment of Ulcerative Colitis." Dr. Jacob Arnold Bargen, Rochester, Minn., will conduct a clinic.

## NORTH CAROLINA

**Changes in Health Officers.**—Dr. Clarence H. White, Burnsville, district health officer for Avery, Watauga, Yancey and Mitchell counties, has been appointed health officer of a new unit in Catawba County, it is reported. Dr. Robert R. King, Boone, has been appointed district health officer in a new district made up of Ashe, Alleghany and Watauga counties.

**Society News.**—Dr. Claiborne T. Smith, Rocky Mount, addressed the Edgecombe-Nash Counties Medical Society August 10 in Tarboro on "Bromide Intoxication."——Drs. Richard B. Dunn and Opie Norris Smith, both of Greensboro, addressed the Guilford County Medical Society August 4 on "Modern Methods of Resuscitation of the Newborn" and "Bromide Poisoning" respectively.——Dr. Thomas T. Stixrud, formerly of North Carolina and a missionary to the Belgian Congo for many years, addressed the Buncombe County Medical Society, Asheville, August 17, on sleeping sickness.

## OHIO

**Regional Graduate Lectures.**—The second series of graduate lectures in a five year educational program sponsored by the Ohio State Medical Association opened September 7 in Mansfield and Dayton and September 8 in Zanesville. Sessions in region E will be alternated between Dayton and Springfield. There will be eight sessions with two lectures each in each group, the series ending early in December. Subjects to be covered in all sessions are the clinical aspects of arteriosclerosis, treatment of early syphilis, pneumonia, diabetes, intestinal obstruction, common lesions of the cervix, prophylaxis and treatment of common contagious diseases, tuberculosis in infancy, common psychoses, cancer of the breast, antepartum and postpartum care, infections of the urinary tract, angina pectoris and coronary thrombosis, fungus infections of the skin and arthritis.

## OKLAHOMA

**Society News.**—The Pittsburg County Medical Society was addressed June 17 by Drs. Frederic G. Dorwart and Edward Halsell Fite, Muskogee, on statistical studies of diuretics and urology in children respectively.

**Graduate Study in Obstetrics.**—The Oklahoma State Medical Association is sponsoring a two year plan for graduate teaching in obstetrics in cooperation with the Commonwealth Fund of New York and the state department of health. The state has been divided into twelve teaching circuits, five cities to a circuit. The course will consist of a lecture each week for ten weeks in each town. Dr. Edward N. Smith, Oklahoma City, will be the lecturer.

## OREGON

**State Medical Election.**—Dr. Charles E. Hunt, Eugene, was chosen president-elect of the Oregon State Medical Society at the annual session at Mount Hood Timberline Lodge August 24-27 and Dr. Charles E. Sears, Portland, became president. Vice presidents elected were Drs. Louis P. Gambee, Portland; Frank L. Ralston, La Grande, and George E. Henton, Portland. Dr. Morris L. Bridgeman, Portland, was reelected secretary.

**Vender of Medicinal Tea Enjoined.**—Mary Rockwell of Portland, operating under the trade name of the Rhein Gold Tea Company, was enjoined from engaging in the illegal practice of medicine in an action recently instituted by the state board of medical examiners in the circuit court of Oregon, fourth judicial district, department 2. While the defendant claimed that she merely sold a food product in the form of a tea brewed from certain herbs possessing health-giving properties, the evidence indicated that she diagnosed ailments of persons from a study of what the court referred to as "urine analysis charts" and prescribed one or more of the fifteen teas she sold. She attempted to treat mastoiditis, tumors, diabetes, epileptic fits, constipation, kidney disease, headaches and gynecologic disorders by prescribing drugs said by the court to be largely cathartic. The defendant employed no physicians at the time this action was instituted but on prior occasions she had employed one or two for a few weeks. These physicians, however, severed their connection with the defendant's business. While the court thought it immaterial whether or not the defendant benefited any person for whom she prescribed, it was difficult for the court to conclude from the evidence that the "urine analysis charts" showed physical deficiencies that could be corrected by products sold by the defendant. This case, according to the attorney for the Oregon State Board of Medical Examiners, is the first instituted by the board under an amendment to the medical practice act adopted in 1937 specifically authorizing the board to institute proceedings to enjoin the illegal practice of medicine.

## PENNSYLVANIA

**State Medical Meeting at Scranton.**—The eighty-eighth annual session of the Medical Society of the State of Pennsylvania will be held in Scranton October 3-6, under the presidency of Dr. Frederick J. Bishop, Scranton. Guest speakers who will address general and section meetings include:

Dr. Frank E. Adair, New York, Cancer.
Dr. Robert L. Levy, New York, Therapeutic Aspects of Cardiac Pain.
Dr. Maxwell Finland, Boston, Control of Pneumonia.
Dr. Julius L. Wilson, West Haven, Conn., Pathology, Symptoms and Diagnosis of Pulmonary Tuberculosis.
Dr. Henry A. Christian, Boston, Certain Clinical Aspects of Chronic Bright's Disease.
Dr. Shields Warren, Boston, A Consideration of the Recent Important Discoveries Concerning the Etiology, Pathologic Physiology and Pathology of Diabetes.
Dr. Perrin H. Long and Eleanor A. Bliss, Sc.D., Baltimore, Further Observations upon the Use of Sulfanilamide and Its Derivatives in the Treatment of Infectious Diseases.
Dr. Abraham H. Aaron, Buffalo, Medical Measures of Value in the Treatment of Gastrointestinal Diseases.
Dr. Richard H. Overholt, Brookline, Mass., Recent Advances in the Treatment of Pulmonary Tuberculosis.
Dr. Harvey B. Stone, Baltimore, Surgery of the Colon.
Dr. Samuel J. Kopetzky, New York, Management and Treatment of Otogenic Meningitis.
Dr. Cecil S. O'Brien, Iowa City, The Extraction of Senile Cataract.
Dr. Josephine B. Neal, New York, Treatment of Meningitis.
Emerson R. Sausser, D.D.S., Philadelphia, The Problem of Dental Diseases Affecting the Child.
Dr. Charles F. McKhann, Boston, Tissue Extracts and Blood Coagulation.
Dr. Frank J. Eichenlaub, Washington, D. C., Transfusion Syphilis.
Dr. Philip W. Brown, Rochester, Minn., The Mutual Interchange of Intestinal and Urinary Signs.
Dr. Benjamin P. Watson, New York, Present Attainment and Future Hope—An Obstetrical Review.

Round table conferences have been arranged on cancer, cardiovascular diseases, pneumonia, tuberculosis, nephritis and diabetes, in which several of the guests will participate. The section on pediatrics will have a panel discussion of endocrinology in childhood and the section on urology a symposium on chemotherapy.

### Philadelphia

**Society News.**—At the first fall meeting of the Philadelphia County Medical Society, September 21, Dr. Chauncey L. Palmer, Pittsburgh, chairman of the committee on public health legislation, Medical Society of the State of Pennsylvania, will make an address entitled "Whither Medicine?" ——A symposium on biliary disease was presented at a meeting of the North End Medical Society and the North Branch of the Philadelphia County Medical Society September 15 by Drs. William A. Swalm, Isidor S. Ravdin and Henry L. Bockus.

### Pittsburgh

**Research on Stream Pollution.**—The American Iron and Steel Institute has recently founded a fellowship at Mellon Institute of Industrial Research to study the problem of preventing stream pollution by waste liquors from such operations as "pickling," in which metals are treated with acids. The object of the research will be to treat or process the waste material so as to render it safe for discharge into streams and to recover from it chemicals that can be used again. Willard W. Hodge, M.A., professor of chemical engineering, University of West Virginia, Morgantown, is on leave of absence for a year to head the investigation at Mellon Institute.

## TENNESSEE

**Society News.**—Dr. Paul H. Ringer, Asheville, N. C., addressed the Greene County Medical Society, Greeneville, July 12, on "Early Diagnosis and Treatment of Tuberculosis" and Dr. Jesse B. Naive, Knoxville, "The Part Played by Institutional Care in a Tuberculosis Control Program."—— Drs. Harold J. Starr and John W. Hocker, Chattanooga, addressed the Chattanooga and Hamilton County Medical Society August 4 on "Diarrhea in Children" and "Diagnosis and Treatment of the More Common Skin Conditions in Children" respectively.—— Among speakers at a meeting of the Memphis and Shelby County Medical Society July 5 were Drs. Nicholas Gotten on the use of mandelic acid in epilepsy and Charles G. Andrews, cancer of the breast; both are of Memphis.

## TEXAS

**Committee on Industrial Health Appointed.**—Dr. Charles M. Aves, Houston, has been appointed chairman of a new committee on industrial health of the Texas State Medical Association. Members of the committee are Drs. William P. Lowry, Wichita Falls; Ross B. Trigg, Fort Worth; George Sladczyk, Port Arthur, and Harry A. Haverlah, Palestine.

**Hospital News.**—Plans have been announced for a forty bed isolation hospital in connection with the El Paso City-County Hospital, to be built at a cost of about $50,000 financed in part with PWA funds. The building will be in modified Spanish style of one story. There will be a special department for patients with poliomyelitis.——The Methodist Hospital, Fort Worth, is to be renamed the Harris Memorial Hospital in memory of the late William H. Harris, father of the medical superintendent, Dr. Charles H. Harris. The hospital has received as an endowment the Harris Clinic and Hospital, valued at $200,000, notes totaling $153,000 held against the hospital by Dr. Harris, and a share in the Harris estate at his death estimated at from $250,000 to $500,000, according to *Hospitals*.——Drs. I. Sellers Moore, formerly of Ozona, and Lee Alton Absher, formerly of Portland, Tenn., have opened a $30,000 hospital at Midland. It contains five rooms for patients, an operating room and various treatment rooms, with x-ray and ultraviolet ray equipment.

## VIRGINIA

**Society News.**—Dr. W. Ambrose McGee, Richmond, was the guest speaker before the Fourth District Medical Society in South Hill August 16; his subject was "Prophylaxis and Early Recognition of Allergic Diseases of Childhood." Other speakers were Drs. Ruth S. Mason-Grigg, Petersburg, on "Treatment of Diabetes"; Philip Jacobson, Petersburg, "Complications of Diabetes," and William R. Jordan, Richmond, "General Care of Diabetes."——Dr. John M. Meredith, Charlottesville, addressed the Augusta County Medical Society, Waynesboro, August 3, on "Head Injuries."

**Personal.**—Dr. Meade Stith Brent of the staff of the Central State Hospital, Petersburg, has been appointed superintendent to succeed Dr. Hugh C. Henry. Dr. Henry was recently appointed state hospital director.——Dr. James Nicholas Dudley, formerly of Eastville, has been appointed health officer for the Farmville district, made up of Prince Edward, Buckingham and Nottoway counties.——Dr. Benjamin Roscoe Gary, Newport News, was presented with a silver service recently as a mark of appreciation from his patients.

Dr. Gary has practiced forty-seven years in Newport News. He graduated from the University of Maryland School of Medicine, Baltimore, in 1891.

## WEST VIRGINIA

**Personal.**—Dr. Edwin Cameron, Baltimore, has been appointed health officer of Monongalia County.——Dr. Robert L. Hunter, Whitesville, health officer of Boone County, has been placed in charge of a new Coal River District that includes Boone and Lincoln counties.

## PUERTO RICO

**Personal.**—Dr. Eduardo Garrido Morales has been reappointed by Governor Winship commissioner of health of Puerto Rico for a term of four years.

## GENERAL

**Changes in Status of Licensure.**—The New Jersey Board of Medical Examiners recently reported the following actions:

Dr. Ernest Casini, Garfield, license revoked April 20.
Dr. Joseph F. Iuliani, Newark, license restored June 15.

The New York State Board of Medical Examiners reported the following action:

Dr. Sigmar K. Reinholt Hilfer, whose last known address was 5 Riverside Drive, New York, license revoked May 20, on the charge of fraud and deceit in the practice of medicine.

The Oklahoma State Board of Medical Examiners recently reported the following action:

Dr. Mark White, Chicago, license issued by reciprocity from Iowa revoked June 9 for unprofessional conduct.

**Mississippi Valley Tuberculosis Meeting.**—The silver anniversary meeting of the Mississippi Valley Tuberculosis Conference and the Mississippi Valley Sanatorium Association will be held in St. Louis September 21-24 under the presidency of Dr. Edward A. Meyerding, St. Paul, for the conference and of Dr. Vera V. Norton, Cincinnati, for the association. Among speakers at various sessions will be:

Dr. Herman E. Hilleboe, St. Paul, Analysis of Results of Modern Methods of Treatment in Sanatoriums.
Dr. Cameron St. Clair Guild, New York, The Problem and a Program for Combating Tuberculosis Among Negroes.
Dr. Paul A. Teschner, assistant director, Bureau of Health Education, American Medical Association, Chicago, Interpreting Tuberculosis to Ready-Made Audiences.
Dr. Jay Arthur Myers, Minneapolis, Modern Concepts of Tuberculosis (in a symposium).
Dr. Evarts A. Graham, St. Louis, Extrapleural Pneumothorax.

**Death Rates in Large Cities in 1937.**—The New York City Department of Health has issued its annual tabulation of death rates in twenty-seven large cities of the United States, prepared from information furnished by the health officers of the cities. Detroit had the lowest rate of any of the cities listed, 8.6 per thousand of population, and Denver the highest, 15.9. For the five largest cities the rates were: New York 10.4, Chicago 10.3, Philadelphia 12.4, Detroit 8.6, and Los Angeles 12.8. The average rate for the twenty-seven cities, which have an estimated population of 27,000,000, was 11.6. Rochester, N. Y., showed the lowest infant mortality rate, 32 per thousand births. San Francisco was second with 32.6 and Jersey City, N. J., had a rate of 32.9. New Orleans had the highest rate, 78.3. The average birth rate was 15.3. The highest birth rate occurred in Jersey City, 20.7, and Denver was second with 20.1. The lowest was in San Francisco, 11.9.

**Pharmacists Urge Freedom of Choice in Medical Care.**—The American Pharmaceutical Association at its recent annual meeting in Minneapolis adopted a resolution pledging its cooperation in devising suitable plans for the utilization of the present existing agencies that provide medical services. The resolution emphasized especially that the association urges the retention of free choice of physician, dentist, pharmacist and nurse by the patient as an essential feature in whatever system may be adopted. At the Minneapolis meeting the association's committee on study of pharmacy was renamed the "committee on social and economic relations" in view of the fact that its duties have been enlarged to include consideration of employer-employee relations, governmental participation in supplying necessary health services and other matters involving the relation of pharmacy to the social and economic structure.

**Center for Training in Safety Education.**—The National Conservation Bureau of the Association of Casualty and Surety Executives in cooperation with New York University has set up at the university a national center for the training of teachers and supervisors in the field of safety. Ned H. Dearborn, dean of the division of general education at the university, is chairman of an advisory committee and Albert W. Whitney, consulting director of the National Conservation Bureau, is vice chairman. Herbert J. Stack is director of the new center. Activities of the center will be in four main divisions: graduate courses in safety education for city and state supervisors, research on preparation of books and manuals for carrying on safety activities, field and consultant work, and the publication and distribution of courses of study, books, visual aids and other educational publications. Twenty-eight fellowships and scholarships are to be awarded this year for courses, many of them leading to an advanced degree. Several of the courses will be given in other centers near New York.

**Symposium on Mental Health.**—The American Association for the Advancement of Science announces that a symposium on mental health will be presented at the midwinter meeting in Richmond, Va., December 28-30, under the chairmanship of Dr. Walter L. Treadway, assistant surgeon general, U. S. Public Health Service. Six sectional sessions will will be held over the three days and a general discussion session will conclude the symposium Friday evening December 30. Chairmen for the sessions have been named as follows: Drs. Clarence M. Hincks, New York, mental health administration; Nolan D. C. Lewis, New York, research into mental illness; Franklin G. Ebaugh, Denver, professional education; Abraham Myerson, Boston, community sources of mental disorders—their amelioration and prevention; Harry Stack Sullivan, New York, physical and cultural environment in relation to the conservation of mental health, and Joseph Zubin, Ph.D., U. S. Public Health Service, economic aspects of mental disease. Papers will not be read at these sessions but will be published before the meeting and used as a basis for discussion. The program committee is made up of the session chairmen and the following additional members: Drs. Samuel W. Hamilton and Grover A. Kempf, New York; Roscoe W. Hall, Washington, D. C.; James S. Plant, Newark, N. J.; Malcolm H. Soule, LL.D., Ann Arbor, Mich., and Paul O. Komora, associate secretary, National Committee for Mental Hygiene. Communications should be addressed to Symposium on Mental Hygiene, American Association for the Advancement of Science, Room 822, 50 West Fiftieth Street, New York.

**American Hospital Association.**—The fortieth annual convention of the American Hospital Association will be held in Dallas, Texas, September 26-30, under the presidency of Robert E. Neff, Iowa City. Among speakers who will address general and section meetings will be:

Dr. John H. Musser, New Orleans, Significant Nutritional Developments to Be Considered in Institutional Food Service.
Edward H. Lewinski-Corwin, Ph.D., New York, The Hospital of the Future.
Arthur J. Altmeyer, chairman, Social Security Board, Washington, D. C., The Relation of Hospital Service to a National Health Program.
Dr. Harry E. Kleinschmidt, New York, The Role of the General Hospital in the Control of Tuberculosis.
Dr. Hugh Leslie Moore, Dallas, Control of Infection in a Children's Hospital.

Other features will be a panel discussion on hospital care insurance, clinical demonstrations on emergency room technic and orthopedic work, and various round table discussions. Meeting in conjunction with the association will be the American Protestant Hospital Association September 23-25, the National Association of Nurse Anesthetists September 26-30 and the American College of Hospital Administrators September 25-26.

## CANADA

**New Dean Appointed at Montreal.**—Dr. Joseph Albert LeSage, professor of clinical medicine, University of Montreal Faculty of Medicine, Montreal, Que., has been appointed dean of the medical faculty to succeed Dr. Télesphore Parizeau, who has retired. Dr. Georges H. Baril, professor of physiologic chemistry, has been made director of studies.

## LATIN AMERICA

**Meeting of Orthopedic Surgeons.**—The third congress of the Brazilian Society of Orthopedics and Traumatology was held in Recife, Pernambuco, Brazil, July 1-3, under the presidency of Dr. Luiz Barros, Lima, professor of orthopedic surgery, Faculty of Medicine of Recife. The principal subjects for discussion were "Fractures of the Ankle" and "Sequelae

of Infantile Paralysis." The next congress will be held in São Paulo in July 1940 and the subjects to be discussed are "Fractures of the Spine" and "Lumbar Pains."

### FOREIGN

**Society News.**—The International Spa Federation will hold a meeting in Berlin September 22-23 and the International Spa Congress will be held at Bad Nauheim September 24-27 in conjunction with the second German Balneological Conference. Arrangements are being made by the Reichsfremdenverkehrsverband, Berlin W. 9, Potsdamer Platz 1. —— The Italian Society of Obstetrics and Gynecology will hold its thirty-fifth congress at Perugia October 16-18, instead of Pisa September 20, as previously planned. Subjects announced for discussion are chorionepithelioma, female sterility, painless labor and insurance on maternity.

## Government Services

### Training Course for Fifth Corps Area Reserves

A medicodental military inactive status training course will be held at Cleveland October 3-15 with the cooperation of eight Cleveland hospitals, Western Reserve University and the Cleveland Academy of Medicine. A professional program will be presented for medical and dental officers separately in the mornings and a military program for all officers attending in the afternoons and certain evenings. One hundred hours of inactive status training credits will be granted to all reserve officers completing the course. Inquiries should be addressed to: Headquarters, Organized Reserves, 538 Federal Building, Cleveland.

### Changes in the Food and Drug Administration

Dr. James J. Durrett, chief of the drug division of the Food and Drug Administration, U. S. Department of Agriculture, has been made principal technical adviser attached to the office of the chief of the administration, according to an announcement of changes in personnel made necessary by the enactment of the new federal food, drug and cosmetic law. Dr. Durrett will share with other officers the responsibility of determining administrative questions in the application of the new law and will give special consideration to the adequacy of information submitted by manufacturers with their applications on new drugs filed in compliance with the provisions of the act. Dr. Theodore G. Klumpp, now senior medical officer of the drug division, succeeds Dr. Durrett as chief of that division. Dr. Klumpp graduated from Harvard University Medical School, Boston, in 1928.

### Physicians Needed for CCC Duty

The surgeon of the Eighth Corps Area, U. S. Army, announces that physicians are needed for duty in the Civilian Conservation Corps. Applicants must be graduates of class A medical schools and preference will be given to medical reserve officers of the grades of first lieutenant or captain. The monthly pay status is as follows:

1. Captains, medical corps reserve, with dependents, having over seven and less than seventeen years' service, $336.
2. Captains, medical corps reserve, without dependents, having over seven and less than seventeen years' service, $298.
3. Married first lieutenants, medical corps reserve, $262.67, including allowances.
4. Unmarried first lieutenants, medical corps reserve, $224.67.
5. Civilian physicians placed on duty as contract physicians, $200 if single; $265 if married.

Assignment preference of applicants will be granted when practicable within the five states comprising the eighth corps area: Arizona, Colorado, New Mexico, Oklahoma, Texas and Wyoming. Inquiries should be addressed to the Surgeon, Headquarters, Eighth Corps Area, Fort Sam Houston, Texas.

### CORRECTION

**Anatomic Factors in Pathogenesis and Treatment of Urethrocele and Cystocele.**—In a paper by this title by Curtis, Anson and McVay, in THE JOURNAL, September 3, the words "which ensheath" should have been inserted in the fourth line of the summary following the words "the endopelvic fascia" on p. 905.

## Foreign Letters

### LONDON

*(From Our Regular Correspondent)*

Aug. 27, 1938.

### Closer Contact Between British and American Scientists

A new division has been formed in the British Association which will deal with the social and international relations of science. The association has made much closer contact with the American Association for the Advancement of Science. The number of American visitors this year was a record—more than eighty. The association has been anxious for closer contact, and it will be achieved by lectureships. In one year an eminent American lecturer will come to the British Association and discuss some topic of broad scientific and possibly of social interest, and in the following year a British lecturer will visit America on a similar mission. It has also been felt that the two associations should be closely cognizant of each other's activities. To that end the British Association will elect to honorary membership members of the council and officers of the American association, and the American association will pay a similar compliment.

### Marriage After Recovery from Lethargic Encephalitis

An inquest on a woman aged 25, who died in an epileptic fit, has for the first time in this country given practical proof of the danger of marriage to a woman who has suffered from lethargic encephalitis. She suffered from that disease at the age of 11 years but was stated to have made a remarkable recovery under institutional treatment. Her mother alleged that a physician had said that she would be better if married. She married three years ago, but since the birth of a child last September she had been very ill. The physician who had attended her for several years denied that he ever suggested that she would be better married. "No sane medical man would advise marriage in a case like this," he added. Dr. J. M. Webster, director of the West Midland Laboratory of Forensic Science, gave evidence that there was a tendency for patients who had suffered from lethargic encephalitis to get worse after marriage.

### Research in Food Storage

Experiments which may revolutionize methods of preserving and storing food are being carried out at the Low Temperature Research Station, Cambridge. Scientists working there for the Department of Scientific and Industrial Research are using radium x-rays and ultraviolet rays in search for the ideal sterilizing agent for meat. It is hoped to evolve a method better than the present cold storage. It is thought that meat might be sterilized by radiation without affecting its quality or appearance. But sufficient is not yet known about the action of radiation on biologic material. A new remarkable line of research—biologic control—is being developed. By means of it certain bacteria would be deliberately allowed to grow, while others would be killed or inhibited. It would thus be possible to alter the flavor of meat at will, just as the cultivation of certain bacteria in cheese creates special flavors of the various types.

### The Future of Biochemistry

At the meeting of the British Association a symposium was held in the Chemistry Section under the chairmanship of Sir Frederick Gowland Hopkins, the pioneer of biochemistry in this country. He is 77, a Nobel prize winner and a past president of the Royal Society and the British Association. He has held the chair of biochemistry at Cambridge since 1914

and announced his approaching retirement. In his address he welcomed the government's decision, on the advice of the Medical Research Council, to endow chemotherapeutic studies in this country on a satisfactory scale. It was just fifty years since he "became a would-be biochemist," and he had followed with deep interest the gradual approach of modern organic chemistry to modern biology and medicine. That approach had been slow, but it had accelerated in recent years. He believed that the advent of so many eminent and enlightened organic chemists in the field of biochemistry was of the happiest augury both for the biologic sciences and for medicine. "As I retire from this field I foresee a possibility which gives me some concern. It is inevitable that the thought of the physiologist will come to deal more and more with the chemical aspects of his science. He and the chemist, organic and physical, are moving toward each other. Does this mean that biochemistry, with the special claims it is making today, will disappear? Will the biochemist be squeezed out of existence between the upper and nether millstones? I hope not. It is my faith that the studies of the dynamics of living tissues now emerging from an embryonic stage are fated to develop a technic which must always be specialized and which will become complete. Its application will call for special training, and it will be the main concern of the future biochemist. He will always be needed as a link between the pure chemist, organic and physical, and the needs of biology and medicine."

### The Protection of London Against Air Raids

Though elaborate precautions are being taken against gas attacks on this country, little has so far been done in providing shelters against explosive bombs. In the case of London the difficulty and expense of providing adequate shelter for the population are enormous. A comprehensive scheme, drawn up by the Science Commission of the International Peace Campaign, has been submitted to the government. The commission includes Prof. J. B. S. Haldane, Prof. J. R. Marrack (chemical pathology), Professor Bernal (physics) and leading architects, surveyors and engineers. As the most realistic way of showing how protection could be achieved, an area of London, the borough of St. Pancras, with a population of 136,287, was selected. The report states that the civil population has now become a definite military objective and is not simply the unfortunate recipient of misdirected bombs intended for military targets. It is pointed out that future air raids will be of a far different character from those of the great war, when the total casualties in England were 1,414 killed and 3,416 wounded by about 270 tons of bombs. It is now possible to unload that quantity in about three raids.

The commission recommends the evacuation of children and some of the mothers and the provision of shelters for every one else in such a manner that no one should be more than two or three minutes from the entrance to a shelter. It is proposed that all children up to 14, the mothers of those up to 5, all people over 70, and the sick and infirm be evacuated for the duration of the war to places less liable to attack. To carry this out in St. Pancras would mean leaving 136,287 out of the population of 183,900. It is recommended that a definite area in the country be allocated to each borough. The children up to 3, their mothers and the old people would probably be billeted in existing houses in the country without too much overcrowding. But it would be necessary to provide new accommodation for the school children and those looking after them. Colonies of holiday camp type with educational, sanitary and other facilities should be constructed, each to contain not more than 500 and to be a considerable distance from the next camp, so that no new targets worthy of attack would be created. To provide additional safety the camps should be camouflaged and trench systems constructed in the surrounding country.

Regarding the shelter system, the commission believes a system of tunnels would provide the main solution in St. Pancras. The London clay presents a relatively simple problem for the tunnel engineer. Parts of the present tube railway, lying at a depth of 60 feet or more, can be easily adapted for the purpose of shelter, but the running of trains should not be seriously interfered with and therefore only passages and platforms should be used. The proposed shelters are to be tunnels in the London clay, 50 feet below the surface, of inverted U section and lined with steel. They are to be 6 feet 6 inches wide and 7 feet 6 inches high, with a row of seats along each side and a gangway in the middle. Electric light, air filtration plant, gas locks, hot and cold water, decontamination and dressing rooms, chemical closets and facilities for dealing with minor casualties are to be provided. Access is to be by stairways, staggered to prevent the entrance of missiles.

## PARIS

*(From Our Regular Correspondent)*

Aug. 18, 1938.

### The Experimental Aspect of the Paravitaminoses

A paper based on experimental research was read by Dr. Georges Mouriquand at the June 14 meeting of the Académie de médecine of Paris. He stated that the study of avitaminoses, whether outspoken or latent in their clinical manifestations, had led to his study of the paravitaminoses during the past twenty-five years. This term is employed in the sense in which Fournier used that of parasyphilis for such diseases as tabes and dementia paralytica, which, although of syphilitic origin, failed to show specific tissue changes regarded as typical for this type of infection. The specific lesions of syphilis are amenable to treatment but this is not true of those of the parasyphilitic conditions. The evolution of the definitely recognized vitamin-deficiency conditions, i. e., of the various avitaminoses, is the same as that from syphilis to parasyphilis. An avitaminosis after having given rise to lesions which can be considered specific for the particular type of avitaminosis is amenable to treatment with the vitamin that is lacking, but this apparent recovery is followed by lesions which are more or less resistant even though the administration of the particular vitamin is continued. One now enters the domain of aspecific lesions to which the term paravitaminosis can be applied. Thus one can speak of a paravitaminosis A, B or D but the author limited his paper to the discussion of acute and chronic paravitaminosis C. An acute avitaminosis C passes through a eutrophic and a dystrophic stage. During the course of the former the typical lesions of scorbutus without general dystrophy are observed. In this stage the use of ascorbic acid during a period of a few days is followed by healing of the lesions and reestablishment of the normal equilibrium of nutrition. From twenty to twenty-four days later, sometimes sooner, a persistent diarrhea appears accompanied by anorexia and a loss of weight. This is the second or dystrophic stage. Even at this period the diarrhea can be checked by ascorbic acid, but, although the appetite returns, the signs of defective nutrition increase from day to day. The animal, although showing marked evidence of inanition, continues to eat but assimilation has come to a standstill. No matter how much ascorbic acid is given, the inanition persists, i. e., a new form of dystrophy has supervened and one can speak of an acute paravitaminosis of the athrepsic type.

The author's study of chronic avitaminosis C has been of special interest in clearing up the question of paravitaminosis C.

It is not difficult to produce a chronic scorbutus in guinea pigs. Toward the thirty-fifth to fortieth day, lesions appear which are characterized by edemas and hemorrhages, which at times assume huge proportions but which respond promptly to the action of ascorbic acid. If, however, no such treatment is given, the lesions tend to regress and even disappear; but

as sequels a marked muscular retraction with pseudo-ankylosis, especially of the hind legs of the animal, appear. Radiography toward the seventieth or eightieth day reveals progressive osseous changes in the form of decalcification of the epiphyses and a marked periostitis. At this time there is a transition from the stage of avitaminosis to that of a paravitaminosis, in which the administration of ascorbic acid has no influence on the osseous lesions, which are now in the aspecific stage. If one has not had occasion to follow the bone and muscular changes from the onset, their relation to an avitaminosis may escape detection.

Dr. Mouriquand stated that no clinical observations had as yet been made as to such paravitaminoses.

### Reopening of the Palace of Discovery

One of the most interesting and popular features of last year's Paris Exposition was the scientific exhibit arranged under the supervision of Dr. Pasteur Vallery-Radot, a grandson of Louis Pasteur. This exhibit was reopened to the public July 11 by Mr. Zay, minister of public education. The object of the exhibit in the Palace of Discovery is to familiarize the public with the advances that have been made in all branches of science during the last 150 years. Close to the entrance is an enormous apparatus for generating static electricity constructed by Professor Joliot, son-in-law of the late Mme. Curie. The discoveries of the latter and of Langevin on the piezoelectric vibrations of quartz and on ultra sounds have been utilized in a minute organ capable of giving forth a range of combinations of sounds beyond the imagination of an ordinary individual. A planetarium showing the mechanism of eclipses is an instructive feature. The television exhibit includes all the latest discoveries in this field. The same is true of that of the physics display, including demonstrations of atomic and molecular composition of matter. The medical and surgical sections include a series of charts, amplified by charts and by photographs of bacteriologists of all countries who have become famous as the result of their contributions to this field. In the surgical section the different methods of blood transfusions are illustrated with the aid of wax figures of donors and recipients, showing how the different types of apparatus are employed. The anesthesia section gives the lay public an idea of the progress made during recent years in this special field. Modern medicine can look with pride on the contributions which it has made to the prolongation of life as reflected in its exhibits in the Palace of Discovery.

### Plaque in Honor of Professor Brown-Séquard Dedicated at Nice

During the recent Congrès des sociétés savantes, a plaque in commemoration of the work of the late Professor Brown-Séquard was placed in the lobby of the Centre Universitaire at Nice. Before Brown-Séquard's election as professor of experimental and comparative pathology in the University of Paris, he had been professor of pathology of the nervous system at Harvard University and subsequently a member of the attending staff of the Paralyzed and Epileptic Hospital in London. He is perhaps best known for the paper published in France in 1850 on decussation of the sensory fibers in the spinal cord to explain the syndrome to which the term Brown-Séquard type of hemiplegia has since then been constantly applied. His studies on the function of the sympathetic nervous system were published in Philadelphia in 1852, and his contributions concerning the part played by the endocrine glands in physiology and clinical medicine laid the foundation for present day endocrinology.

### Birth Rate Continues to Decline

According to the most recent statistics, 274,122 marriages took place in France in 1937, as compared to 350,000 in 1930. There has been a similar decrease in the number of births since 1930. In that year there were 749,953 births; two years later the number rose to 772,246, but in 1937 it dropped to 616,863. In 1930 there were 100,000 more births than deaths, while in 1937 the number of births exceeded the number of deaths by only 12,000.

### Dr. Clovis Vincent Appointed Professor of Neurosurgery

As stated in a previous letter, a department of neurosurgery has been organized at the Faculté de médecine (medical school of the University of Paris). Dr. Clovis Vincent was appointed head of this department August 1 and will begin his courses at the opening of the fall session of the school.

## BERLIN

*(From Our Regular Correspondent)*

Aug. 8, 1938.

### The Exclusion of Jewish Physicians

On August 3 a new, fourth amendment to the Nuremberg racial laws was made public. The effect of its enforcement will be to exclude Jewish physicians from the medical profession. On September 30 the licenses (approbationen) of all Jewish physicians become null. From this date a Jewish doctor will not be permitted to attend a patient of German blood. Nor will any whose license is revoked by this ordinance be permitted to practice as a so-called heilpratiker (a term which in the last analysis signifies "quack"); as the official text reads, he cannot thus "attempt to circumvent the law."

Dr. Grote, director of the association of panel practitioners, has contributed to the *Voelkischer Beobachter* an interesting statistical report on Jewish practitioners in Germany. At the time of the Nazi accession to power in 1933 there were within the reich a total of 6,480 Jewish physicians; included in this number were Jewish hybrids and doctors of Jewish affinity. There were then about 50,000 physicians in Germany, of which number the group classified as Jewish comprised some 13 per cent. In June 1937 there were still 4,220 Jewish physicians in the reich, 3,748 of whom held valid licenses and were engaged in practice. At the time of the Nazi revolution the so-called "alienization" of the profession had been greatest in Berlin; from 70 to 80 per cent of all physicians in that city were Jews. Even after the first "purge" (the term is Dr. Grote's) more than one half of Berlin doctors were Jews, 3,423 Jews in a total 6,558 doctors. In July 1938 there were still 1,561 Jews among the 6,949 physicians of Berlin, the percentage of Jews having declined to 22.4. Among the 2,973 panel practitioners in Berlin in July there were still 816 (27.4 per cent) Jews. The example of Berlin demonstrates, according to Dr. Grote, that previous legislation has not resulted in definitive solution of the problem of the exclusion of Jews in the medical profession, so vitally important to the nation. After October 1, Jewish doctors will be granted special permission to practice but only in communities in which the Jewish population is highly concentrated, as in Berlin. The new law also will, in effect, strengthen the supreme authority of the national fuehrer of physicians over all medical affairs.

The mentioned exceptional permission to remain in practice which will be granted to certain Jewish doctors will not be tantamount to a restoration of the regular license. It will be rather of the nature of a temporary, readily revocable permit to practice medicine under certain specified conditions. A Jew who holds such a permit must, excepting in the case of his wife and legitimate children, restrict his practice to Jewish patients. Violations of this provision, whether intentional or inadvertent, are to be punishable by imprisonment for not more than one year, by fine or by both. Former front line combatants in the World War who are deprived of their licenses by the new law will be granted temporary compensation by the national chamber of physicians, on the basis of need and merit. Further clauses

concern the premature termination of service contracts, leases and so on, necessitated by the new legislation.

According to authoritative report, the organized medical profession will assist Jewish doctors to obtain reeducation in other fields. This movement will receive adequate financial support; further details with regard to it are not yet available.

On the basis of a far-reaching decision of the national bureau of insurance, Jewish hospitals are forbidden to treat non-Jewish sick insurance club patients. In explanation of this measure, it is stated that treatment of non-Jews in a Jewish-controlled hospital provides opportunities for just those contacts between German citizens and Jews which are to be avoided as much as possible.

### Determination of Alcohol Content of the Blood

The national fuehrer of the schutzstaffel and the chief of German police have issued a decree with regard to forensic determination of the alcohol content of the blood. The new regulations are based on the aggregate of experience with this problem and will be uniform for the entire country. Only tests the efficacy of which has been proved by experts will be applied. The blood tests will be made in cases wherein establishment of intoxication has an important bearing on the criminal culpability of a suspected person. Likewise, other persons are submitted to the test if intoxication must be established, because it is the result of or clue to a criminal offense committed on one of these persons. Since obtaining the blood specimen can be legally done only by a physician and since the procedure is altogether harmless, it may be performed even without the consent of the person. In traffic accident cases the incontestable determination of the degree of intoxication of all participants, including the victims, is of the utmost importance. Accordingly, all participants in an accident, not only automobile drivers but pedestrians as well, may be submitted to the blood tests if circumstances so warrant. As a precautionary measure the blood test may be made of any person engaged in driving a vehicle or who contemplates driving a vehicle and whose fitness to drive is questioned because of suspected intoxication. Physical examination must be made without delay as soon as possible after the occurrence in question, in order to establish with maximal accuracy the degree of inebriety or sobriety, as the case may be. The blood specimen should be taken within one and one-half hours after ingestion of the alcohol. The foregoing provisions are enforced by all federal and local police authorities within the German reich.

### Study of Progessive Muscular Dystrophy

The problem whether there is a uniform hereditary transmission of progressive muscular dystrophy was investigated by Drs. Kostakow and Bodarwé at the Medical Clinic of Bonn University. They arrived at the following conclusions after a study of the genealogies of six familial groups in which progressive muscular dystrophy had been present. The disorder is always based on heredity. Its pathogenesis is traceable to mutations within the sum of hereditary factors in the ascendency. Its further heritability is not uniformly independent of the fact that in addition to the dominant genes there are also recessive genes which may lead to manifestation of the disease. The investigations assume the existence of at least two forms of dystrophy which differ genotypically and that these correspond to the infantile and juvenile types and are present in kindred. In two of the six mentioned groups a hereditary sex-linked transmission was determined and in the other four simple recessive transmissions. In one group a consanguineous marriage had occurred; the authors emphasize this circumstance as an important factor in the manifestation of muscular dystrophy through the recessive predisposition. The four groups in which simple recessive hereditary predisposition was determined all resided within a circumscribed rural area. The group in which sex-linked transmission was established presented a predominance of the infantile type of progressive muscular dystrophy with pseudohypertrophy, whereas the simple recessive transmission groups presented both infantile and juvenile types. It was noted that, surprisingly enough, the cause of death in each case had been some disorder of the respiratory organs.

### Measures for the Abolishment of Sterility in Women

The interested ministries, the panel practitioners' association and the sick insurance clubs have instituted concerted measures destined to reduce the incidence of sterility in women to the lowest possible minimum. In certain instances, sterility of married women may be considered a general illness even if the condition is not linked to significant lesions or lack of working capacity. This concept obtains if there is a possibility of abolishing the condition and if the fertility of the patient would best serve the public good. If these prerequisites are fulfilled, the insurance clubs handle the necessary arrangements. The confidential medical advisers of the clubs make the recommendations in each case. The expert opinion of these officers contains data with regard to the curability of the sterility, possible contraindication of surgical measures on the basis of health, and the condition of the husband with regard to procreation. Formerly, arrangements in such cases were under jurisdiction of the national minister of labor, but now the minister of the interior is also a participant. The last named official has decreed, as supplementary to previous legislation, that pertinent genealogic data should be acquired by the officers of the hygienic centers. The eugenic standards must be at least as exacting as those required of candidates for the state marriage subsidies. Free examinations of supposedly sterile women are made at the centers. Only women of German or related blood are eligible.

In the wake of all this ministerial regulation the panel practitioners' association of Germany has entered into agreements with a number of the insurance clubs relative to the mentioned examinations for sterility. The expert should decide in addition to the questions already mentioned the matter of the most promising and at the same time most economical procedures to be followed. Special medical services not usually envisaged in the contracts between the sick insurance clubs and the medical organization are paid for even if the examination is not followed by operative or other treatment. The clubs also assume the costs of the genealogic investigation. If all the prerequisites are satisfied, the cost of treatment is shouldered by the club in question.

### Cancer and Occupation

The National Anticancer Commission undertook a questionnaire survey with regard to the occupation of 1,250 male cancer patients. A distinction was made between skilled workers and unskilled workers. Dr. Hellmut Haubold, cancer specialist of the National Health Bureau, reports the results in the *Reichs-Gesundheitsblatt*. Men of uncertain occupation were so listed and in the definitive classification this group was reckoned among the unskilled workers. But despite this precaution the survey showed that a vast majority, 75.8 per cent of the men, belonged to the skilled worker class. Of these 951 skilled workers the largest individual group (227 men) was that of the civil servants. In second place were 150 farmers, and in third place 139 workers in the metallurgic and related industries, including workers in the production of iron and steel and workers in wrought metals; next were 101 workers in the building trades. The largest class among the unskilled workers appertained to the iron, steel and other metal industries; second in rank were the unskilled farm laborers. The proportion of skilled workers, who comprised more than three fourths of the subjects, was explained as a logical result

of the membership in an occupational group and cancer incidence at a particular age level, since among the older group the proportion of skilled workers tends to exceed the proportion of the unskilled. Among the 1,250 men, only 110 skilled and seventy-one unskilled workers were over 70 years of age, namely but 14.4 per cent of the total. Moreover, it was found that the group most threatened by cancer lay between the ages of 40 and 65 (almost 60 per cent of the men were between these ages). This formidable incidence of cancer in middle age represents an important national menace, for cancer is by no means only a disease of old age. This is one more reason why the campaign against cancer should go forward intensely.

### The Sphere of Application of Tomography

The question Under what conditions may tomography be substituted for the usual roentgenography? was recently discussed by Dr. H. J. Teschendorf before the Frankfort Medical Society. Experience to date has shown tomography (in Germany known as "roentgenschichtverfahren," roentgen-layer method) to be of indispensable value in the determination of tuberculous and bronchiectatic cavities and pulmonary abscesses. Tomographic examination of the lungs following thoracoplasty represents a particularly important application of the newer technic, since a sufficiently clear picture of the extent of the cavity and accordingly of the degree of success achieved by the intervention is but rarely provided by means of the ordinary roentgenogram. Tomography, however, can never completely supplant the usual roentgenography of the lung. The tomographic demonstration is superior to the older methods only in the fields of the sternum and the sternoclavicular joint. These parts cannot be accurately visualized by ordinary roentgenography. How widely tomography may be utilized as an aid in the detection of changes in the vertebral column and cranium, further investigation will disclose.

## POLAND

*(From Our Regular Correspondent)*

Aug. 14, 1938.

### Resolution Concerning Aryans

Some members of the Association of Physicians of Poland who are adherents of racial theories managed at a meeting of the association in December 1937 to pass a resolution forbidding doctors of Jewish origin to the third generation to be members of the association. This paragraph was strongly opposed by the democratic physicians, who in many districts of Poland have formed the majority in the branch associations. The associations of those districts have broken with the board in Warsaw and consequently the association is now divided into two parties. Only the adherents of the racial theories have remained followers of the present board. The latter had to create new branches of the association in those districts of Poland in which a strong opposition on the part of the democratic physicians was encountered. This internal dissension has weakened the authority and activity of the association, which formerly cared for public health and defended the dignity of the medical profession.

### Influence of Pancreatic Tumors on Urine from Right Kidney

Dr. Markert reported six cases of cancer in the cauda pancreatis in which a decrease of the secretional function of the left kidney was noticed. Thus the diuresis, the secretion of urea, chlorates and the dye introduced by intravenous injection were remarkably decreased. That phenomenon is probably caused by a reflex produced by excitation of the sympathic nerves by the infiltrated retroperitoneal lymphatic glands or by the infiltrated capsule of the left kidney. This decrease of the secretion of the left kidney in case of tumor of the cauda pancreatis might suggest an erroneous diagnosis.

### The Congress of Polish Hygienists

The eleventh Congress of Polish Hygienists took place in Lublin July 29-30 on the fortieth anniversary of the Polish Hygienic Society. The meeting was devoted to health problems of villages. On account of the bad state of health in villages, the congress appealed to the government to increase the work of putting the hygiene of the village on a higher level, by supplying the country folk with medical aid. Poland is an agricultural country.

### Study of Causes of Pericarditis

In the Institute of Pathologic Anatomy of the Cracow University, postmortem examinations concerning the causes of pericarditis have been made by Dr. Hassmann. The material consisted of 9,739 cases, among which inflammatory lesions or their residuums in the pericardium were found in 463. Statistical data on the etiology showed the following percentages: rheumatism 19.4, tuberculosis 18.7, septic suppuration 14.6, pneumonia 12.7, purulent pleuritis 9, tumors of the mediastinum 6, diseases of the kidneys 4.5 and myocardial infarct 2.

### Research on Cardiac Arrhythmia

At the session of the medical department of the Polish Academy of Science, May 20, Dr. Hrom of the clinic of Warsaw University read a paper based on 1,300 cases of arrhythmia observed in the last nine years and in which 1,765 electrocardiographic records were made. These researches confirmed the knowledge that cardiac arrhythmia can be caused not only by cardiovascular disorders but by physical effort, tobacco or coffee, digitalis and diseases of other organs. It appeared that atrioventricular dissociation is more often caused by diffuse lesions of the myocardium than by circumscribed lesions. It has also been proved that auricular fibrillation often disappears through a transitory period of auricular flutter. To distinguish extrasystoles of functional origin from those caused by organic lesions of the myocardium, the author has noticed that in the latter case the effort test caused extrasystoles of a different electrocardiographic shape and in different directions, while in functional cases all the electrocardiographic records of the extrasystoles were of the same shape and direction. Cardiac arrhythmia occurred most frequently in women with thyrotoxicosis and in the period of the menopause. It was noticed that auricular fibrillation was more frequent in women than in men, while disorders of conduction occurred more frequently in men.

## *Marriages*

WILLIAM CLINTON WHITE, Washington, D. C., to Miss Frances Evelyn Daniel of Greenville, S. C., recently.

CHARLTON GILMORE HOLLAND, Danville, Va., to Miss Louise Fraser Beckwith at Petersburg, August 6.

HAROLD LAWTON ROGERS, Tuscaloosa, Ala., to Miss Frances Love McKenzie of Fulton, Ky., in July.

HENRY L. SKINNER, Battle Ground, Wash., to Miss Enid Carson of Vancouver, B. C., August 7.

JOHN WALLACE LYNCH, Seaford, Del., to Miss Ruth Marie Cooper of Greensboro, Md., April 17.

JAMES MAXEY DELL to Mrs. Rose H. Eddins, both of Gainesville, Fla., in Baltimore in July.

FRANKLIN MCELHENY, Atlanta, Ga., to Miss Helen Porter of Greenwood, S. C., June 29.

HUGH D. DONAHUE, Boston, to Miss Rose Fitzgerald of Dorchester, Mass., recently.

NOEL CLARK MELLEN, Pensacola, Fla., to Miss Lorrain Bader of St. Louis, July 2.

JOHN M. DORSEY to Mrs. Charlotte Burns Hoefer, both of Chicago, June 29.

# Deaths

**Philip Marvel** ✠ Princeton, N. J., died suddenly September 6 at Bushkill, Pa., aged 81. Dr. Marvel was born in Kent County, Delaware, Sept. 15, 1856. He graduated from the University of Pennsylvania School of Medicine, Philadelphia, in 1884 and practiced for many years at Atlantic City. During his long active career Dr. Marvel served the American Medical Association in many capacities. In 1900-1901 he was third vice president and in 1902 was a member of the House of Delegates. In 1904 he was elected a trustee, serving until 1910, and again from 1911 to 1920. He was again a member of the House of Delegates in 1923, 1928-1930, 1934 and at the special session of 1935. In 1925 he was elected vice president for the second time. Dr. Marvel was president of the Medical Society of New Jersey in the year 1916-1917 and was made an honorary member at the annual meeting in 1935. He was a founder of the New Jersey Tuberculosis League, an Affiliate Fellow of the American Medical Association, a fellow of the American College of Physicians and a member of the American Clinical and Climatological Association. At frequent meetings of the Association in Atlantic City he aided greatly in making arrangements and in coordinating activities. The success and welfare of the organization were his first consideration.

**Edwin Beer** ✠ New York; Columbia University College of Physicians and Surgeons, New York, 1899; member of the American Surgical Association, and American Urological Association; member and past president of the Clinical Society of Genito-Urinary Surgeons; fellow of the American College of Surgeons; served during the World War; attending surgeon to the Mount Sinai Hospital and consulting surgeon to the Bellevue Hospital; in 1936 received a gold key of merit from the American Congress of Physical Therapy for his work on the treatment of tumors of the bladder; author of articles on gallstones, intestinal diseases, tumors of the bladder and surgical diseases of the kidney; aged 62; died, August 13.

**William Oliver Spencer,** Winston-Salem, N. C.; Jefferson Medical College of Philadelphia, 1891; member of the Medical Society of the State of North Carolina; formerly member of the state board of health; at one time health officer of Winston-Salem and Forsyth County; former president of the Forsyth County Medical Society and vice president of the Medical Society of the State of North Carolina; on the staffs of the City Memorial and North Carolina Baptist hospitals; aged 75; died, June 30, of diabetes mellitus.

**Abram Tucker Kerr** ✠ Ithaca, N. Y.; University of Buffalo School of Medicine, 1897; assistant in histology and pathology, 1894-1897, acting and adjunct professor of anatomy, 1898-1900, at his alma mater; assistant professor of anatomy, 1900-1904, professor of anatomy and secretary since 1904, Cornell University, acting professor of hygiene, 1920-1922, and acting professor and director of hygiene since 1935; member of the American Association of Anatomists; aged 65; died, August 15, of heart disease.

**David R. Clark** ✠ Detroit; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1895; professor of psychiatry at the Wayne University College of Medicine; member of the American Psychiatric Association; at various times on the staffs of the Receiving, Providence, Highland Park (Mich.) and the Florence Crittenton hospitals; aged 64; medical director of St. Joseph's Retreat, Dearborn, Mich., where he died, July 3, of carcinoma of the head of the pancreas.

**Louis Shepard De Forest,** New Haven, Conn.; Thüringische Landesuniversität Medizinische Fakultät, Jena, Thuringia, Germany, 1885; on the faculty of Yale University School of Medicine as clinical assistant in medicine 1890-1891, instructor in medicine 1891-1892, assistant professor of medicine 1892-1895 and clinical professor of medicine 1895-1899; aged 81; died, August 4, of arteriosclerosis.

**Thomas A. Copeland,** Athens, Ohio; College of Medicine and Surgery, Chicago, 1887; member of the Ohio State Medical Association; for many years secretary of the Athens County Medical Society; served on the local examining board during the World War; aged 73; died, July 9, of cerebral arteriosclerosis and hypertension.

**Clyde Lowe Casey,** Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1913; member of the Illinois State Medical Society; served during the World War; aged 49; died, July 19, in Marion, Ill., of chronic lymphatic leukemia.

**Arthur Ivan Laughlin** ✠ Clarksville, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1903; bank president; member of the school board; for many years secretary of a district board of education; aged 59; died, June 20, of angina pectoris.

**James Elston Adams,** Cushing, Okla.; University of Oklahoma School of Medicine, Oklahoma City, 1917; member of the Oklahoma State Medical Association; on the staff of the Masonic Hospital; aged 42; died, May 31, of injuries received in an automobile accident.

**Samuel Morton Creswell** ✠ Tacoma, Wash.; Rush Medical College, Chicago, 1926; past president of the Washington State Public Health Association; on the staff of the Tacoma General Hospital; health officer; aged 38; was killed, July 8, in an automobile accident.

**William Matthews Bigham,** Memphis, Tenn.; Missouri Medical College, St. Louis, 1881; member of the Tennessee State Medical Association; on the staff of St. Joseph's Hospital; aged 78; died, July 8, in the Gartley-Ramsay Hospital of uremia and pyelitis.

**John Joseph Fralinger,** Philadelphia; Jefferson Medical College of Philadelphia, 1912; member of the Medical Society of the State of Pennsylvania; also a pharmacist; on the staff of St. Agnes' Hospital; aged 55; died, June 21, of chronic myocarditis.

**Orton Horace Clark,** Pasadena, Calif.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1892; served during the World War; aged 74; died, July 26, in the University Hospital, Ann Arbor, Mich., of bronchopneumonia.

**Frank Nott Danforth** ✠ Texas City, Texas; University of Texas School of Medicine, Galveston, 1905; health officer; formerly member of the school board; aged 55; died, July 16, in the John Sealy Hospital, Galveston, of coronary thrombosis.

**Nelson Kaufman Fromm** ✠ Albany, N. Y.; Albany Medical College, 1908; associate professor of neurology at his alma mater; served during the World War; on the staff of the Albany Hospital; aged 56; died, June 22, of coronary disease.

**Scott Kenyon Gray,** Watervliet, N. Y.; Barnes Medical College, St. Louis, 1905; served during the World War; aged 61; on the staff of the Troy Hospital, where he died, June 29, of arteriosclerotic heart disease and diabetes mellitus.

**Roswell Kelsey Palmerton,** Deposit, N. Y.; College of Physicians and Surgeons, Baltimore, 1881; member of the Medical Society of the State of New York; formerly bank president; aged 81; died, June 7, of chronic nephritis.

**George Moore Braden,** Scotts, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1883; member of the Michigan State Medical Society; aged 81; died, July 10, of chronic myocarditis and arteriosclerosis.

**Bruce Keifer,** Paden City, W. Va.; Maryland Medical College, Baltimore, 1900; formerly mayor; served during the World War; aged 63; was found dead, June 12, of burns received when he fell asleep with a burning cigaret.

**Simrall Anderson,** Louisville, Ky.; University of Louisville (Ky.) Medical Department, 1901; served during the World War; on the staff of the SS. Mary and Elizabeth Hospital; aged 58; died, July 7, of carcinoma of the liver.

**Forrest Hartley Badger** ✠ Winthrop, Maine; Medical School of Maine, Portland, 1894; past president of the Kennebec County Medical Society; formerly superintendent of schools; aged 68; died, July 13, of coronary thrombosis.

**James Warren Brewer,** Dayton, Ohio; Ensworth Medical College, St. Joseph, Mo., 1908; veteran of the Spanish-American War; formerly on the staff of the Veterans Administration Facility; aged 60; died, June 5.

**James Lyons Biggar,** Toronto, Ont., Canada; University of Toronto Faculty of Medicine, 1903; served in the Boer and World wars; national commissioner of the Canadian Red Cross Society; aged 60; died, June 2.

**Daniel Emanuel Kauffman** ✠ St. Louis; St. Louis University School of Medicine, 1924; served during the World War; aged 40; on the staff of St. Mary's Hospital, where he died, June 16, of uremia and nephritis.

**Achilli Ubaldo Opipari,** Pittsburgh; Regia Università di Napoli Facoltà di Medicina e Chirurgia, Italy, 1906; member of the Medical Society of the State of Pennsylvania; aged 63; died, June 30, of cerebral hemorrhage.

**Patrick Coote,** Quebec, Que., Canada; M.B., Laval University Faculty of Medicine, Quebec, 1882, and M.D., 1884; emeritus professor of clinical ophthalmology and otology at his alma mater; aged 75; died, June 20.

**Edward Cary Ambler,** Roanoke, Va.; University of Virginia Department of Medicine, 1897; member of the Medical Society of Virginia; past president of the Roanoke Academy of Medicine; aged 68; died, July 11.

**Frederic Rudolph Kruger** ⊕ Galveston, Texas; Tulane University of Louisiana School of Medicine, New Orleans, 1903; aged 59; died, June 8, in the John Sealy Hospital of pneumonia following a gallbladder operation.

**Henry M. Freas,** Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1885; member of the Medical Society of the State of Pennsylvania; aged 78; died, June 28, of chronic myocarditis.

**Elmer Ellsworth McAdoo,** Ligonier, Pa.; Jefferson Medical College of Philadelphia, 1891; formerly member of the state legislature, and member of the school board; aged 75; died, June 22, of coronary occlusion.

**Lester Levyn** ⊕ Buffalo; Maryland Medical College, Baltimore, 1909; fellow of the American College of Physicians; member of the Radiological Society of North America; aged 50; died, June 24, of leukemia.

**James F. O'Leary,** Hartford, Conn.; University of Buffalo School of Medicine, 1897; formerly police commissioner; aged 64; died, June 29, in the St. Francis Hospital of hypertension and cerebral hemorrhage.

**Morris Manuta,** Johnstown, Pa.; Medical College of Virginia, Richmond, 1937; aged 25; intern at the Conemaugh Valley Memorial Hospital, where he died, June 14, following an operation for appendicitis.

**Harry Hambleton Stewart** ⊕ Pottsville, Pa.; Baltimore Medical College, 1907; served during the World War; aged 68; on the staff of the Lemos B. Warne Hospital, where he died, June 17, of typhoid.

**Clarence C. Tolleson,** Long Beach, Calif.; University of Maryland School of Medicine, Baltimore, 1914; on the staff of the Community Hospital; aged 47; died, June 12, in a hospital at Hermosa Beach.

**Alvah Cochran Cummings** ⊕ Newton, Mass.; Harvard University Medical School, Boston, 1901; for many years city physician; aged 64; died, July 11, at Grand Lake Stream, Maine, of heart disease.

**Arthur Gamble Hilliard,** Rochester, N. Y.; New York Medical College and Flower Hospital, New York, 1914; served during the World War; aged 50; died, June 19, of coronary thrombosis.

**Warren Clifford Batroff** ⊕ Philadelphia; Medico-Chirurgical College of Philadelphia, 1903; veteran of the Spanish-American War; aged 58; died, June 20, in Merion Station, Pa.

**Luigi Balducci,** Rochester, N. Y., Regia Università di Napoli Facoltà di Medicina e Chirurgia, Italy, 1908; aged 55; died, May 2, of carcinoma of the prostate and secondary anemia.

**Jose I. Abuel y Villasenor** ⊕ Manila, P. I.; University of the Philippines College of Medicine, Manila, 1918; assistant professor of surgery at his alma mater; aged 45; died, May 7.

**Quinn Worth Gard** ⊕ Seguin, Texas; Washington University School of Medicine, St. Louis, 1928; on the staff of the Seguin Hospital; aged 35; died, July 20, of coronary disease.

**George O. Davis,** Madison, Fla.; College of Physicians and Surgeons, Baltimore, 1903; member of the Florida Medical Association; aged 62; died, July 6, of coronary thrombosis.

**James Walter Myer,** Pelham, N. Y.; Harvard University Medical School, Boston, 1903; aged 65; died, June 11, in the Mount Vernon (N. Y.) Hospital of coronary thrombosis.

**Edward E. Rowell Sr.,** Stamford, Conn.; New York Homeopathic Medical College, 1877; aged 84; died, June 27, of cerebral thrombosis, arteriosclerosis and chronic nephritis.

**Lemuel Caro** ⊕ New Rochelle, N. Y.; Cornell University Medical College, New York, 1921; aged 41; was killed, July 22, in an airplane accident near Bucharest, Rumania.

**Henry Smith Turrill** ⊕ Kent, Conn.; Yale University School of Medicine, New Haven, 1910; for many years health officer; aged 53; died, June 7, of arteriosclerosis.

**James Lawrence Cornitcher,** Danville, Va.; Meharry Medical College, Nashville, Tenn., 1929; aged 39; died, July 7, in the Providence Hospital of intestinal obstruction.

**Morris Karl Diner,** New York; University and Bellevue Hospital Medical College, New York, 1937; intern at the Morrisania City Hospital; aged 23; died, June 9.

**Edgar Sargent Ferris,** Columbus, Ohio; Miami Medical College, Cincinnati, 1888; aged 72; died, July 6, of acute yellow atrophy of the liver and chronic myocarditis.

**Thomas Walter Witt,** Lake City, Fla.; Atlanta Medical College, 1915; formerly secretary of the Columbia County Medical Society; aged 46; died, June 8.

**Ervin S. Thompson,** Smoaks, S. C.; Medical College of the State of South Carolina, Charleston, 1910; aged 58; died, June 27, in a hospital at Walterboro.

**Samuel H. Vehslage,** Scarsdale, N. Y.; New York Homeopathic Medical College, 1879; aged 89; died, June 18, of cerebral arteriosclerosis and myocarditis.

**Franklin Henderson Doud,** Lysander, N. Y.; University of Michigan Homeopathic Medical School, Ann Arbor, 1893; health officer; aged 74; died, June 5.

**Abraham Malisoff,** Woodridge, N. Y.; Cornell University Medical College, New York, 1900; aged 61; died, June 18, of gastric carcinoma and heart disease.

**John Rumbaugh Shetter,** Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1895; aged 77; died, June 18, of coronary occlusion.

**Henry A. Smith,** Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1875; aged 89; died, June 18, of myocardial degeneration.

**James Winter Brown,** Stoneboro, Pa.; University of Oklahoma School of Medicine, Oklahoma City, 1914; aged 52; died, June 29, of tumor of the brain.

**William Rich Collett,** Philadelphia; Jefferson Medical College of Philadelphia, 1931; on the staff of the Friends Hospital; aged 31; died, June 18.

**Alexander Joseph Burkholder,** Staunton, Va.; Baltimore University School of Medicine, 1902; aged 77; died, July 15, of myocarditis and heart block.

**Walter S. Spears,** Ardmore, Okla.; Fort Worth School of Medicine, Medical Department of Texas Christian University, 1902; aged 69; died in June.

**Hughlett Hardcastle,** Easton, Md.; University of Maryland School of Medicine, Baltimore, 1895; aged 76; died, June 18, in the Emergency Hospital.

**Abraham Shaw,** Philadelphia; Queen's University Faculty of Medicine, Kingston, Ont., Canada, 1899; aged 64; died, June 29, of cerebral hemorrhage.

**William Harter Everhard,** Medford, Ore.; Rush Medical College, Chicago, 1880; aged 81; died, July 17, of carcinoma of the lungs and prostate.

**William J. Bowen,** Mount Pleasant, S. C.; Medical College of South Carolina, Charleston, 1893; aged 69; died, July 14, of cardiac dilatation.

**David M. Buck, Jr.,** Asheville, N. C.; Medical College of Virginia, Richmond, 1925; aged 35; was killed, June 19, in an airplane accident.

**Carl L. Cheney,** De Kalb, Ill.; Chicago Homeopathic Medical College, 1902; aged 63; died, July 9, in the Public Hospital, of heart disease.

**Luther A. Donoho,** Wayland, Ky.; University of Tennessee Medical Department, Nashville, 1907; aged 54; died, July 2, in Martin, Tenn.

**Lawrence H. Smith** ⊕ Hazleton, Pa.; College of Physicians and Surgeons, Baltimore, 1883; aged 78; died, June 20, of pneumonia.

**George Conrad Snyder,** San Francisco; Ohio Medical University, Columbus, 1901; aged 72; died, June 16, in Philadelphia.

**John Wesley Porter,** New Park, Pa.; University of Maryland School of Medicine, Baltimore, 1895; aged 72; died, June 26.

**William Franklin Smith,** Decherd, Tenn.; Vanderbilt University School of Medicine, Nashville, 1898; aged 70; died, June 18.

**Rafael Jacobsen,** Havana, Cuba; University of Pennsylvania School of Medicine, Philadelphia, 1913; aged 47; died, June 4.

**Walter Andrew Reichle** ⊕ Spokane, Wash.; Creighton University School of Medicine, Omaha, 1924; aged 42; died, June 4.

**James P. Drafts,** Leesville, S. C.; University of Tennessee Medical Department, Nashville, 1899; aged 62; died, July 1.

**Gideon Meredith Freeman,** Los Angeles; Cooper Medical College, San Francisco, 1903; aged 58; died, June 15.

**Everett Herschel Winter,** Hollis, N. Y.; Long Island College Hospital, Brooklyn, 1899; aged 64; died, June 27.

**Wiley Claude Crump,** Lumberton, N. C.; Meharry Medical College, Nashville, Tenn., 1926; aged 42; died, June 20.

**Jacob S. Krebs,** Herndon, Pa.; College of Physicians and Surgeons, Baltimore, 1884; aged 76; died, June 10.

**William Jay Dugan,** Paris, Ill.; Missouri Medical College, St. Louis, 1899; aged 64; died, July 12.

# Correspondence

## SOLITARY TUBERCULOMA OF THE LIVER

*To the Editor:*—In an article which appeared in THE JOURNAL August 6, Herrell and Simpson report what they consider to be a case of solitary tuberculoma of the liver with an exceedingly rare "pathologic lesion." It is highly questionable whether the authors are justified in ascribing the cause of the condition to the tubercle bacillus on the weak evidence they present. The clinical course and laboratory data are not typical of tuberculosis, no mention is made of tests with tuberculin, and no evidence of tuberculosis elsewhere was found. Under these circumstances one cannot make a diagnosis of tuberculosis simply because of the presence of small granulomas and giant cells in the lesion. Many other conditions may give rise to similar granulomatous changes in the liver, among which may be mentioned chronic low grade infection with a mixture of bacteria, actinomycosis or other fungous infections, glanders, tularemia and undulant fever.

It would seem that before one could accept a diagnosis of the rare condition called tuberculoma of the liver it would be necessary to prove the diagnosis by the demonstration of tubercle bacilli in the lesion by tinctorial or cultural methods.

HOBART A. REIMANN, M.D., Philadelphia.

## AMPLIFICATION OF HEART AND LUNG SOUNDS

*To the Editor:*—The sweeping statement of Douglas Macfarlan (THE JOURNAL, June 18, p. 2069) that "amplification of heart and lung sounds is neither practical, nor desirable, nor needed for the physician with normal hearing" should not remain unchallenged.

Amplification has been made practical by several devices described in the literature:

Beruti, J. A.: *Semana méd.* **30:** 829, 1923.
Duchosal, P., and Luthi, R.: *Arch. méd. d. mal. du cœur* **22:** 806, 1929.
Sell, H.: *Med. Klin.* **28:** 150 (Jan. 29) 1932.
Bierring, W. L.; Bone, H. C., and Lockhart, M. L.: Use of the Electrostethograph for Recording Heart Sounds, THE JOURNAL, Feb. 23, 1935, p. 628.
Narat, J. K.: *Illinois M. J.* **70:** 131 (Aug.) 1936; *Ztschr. f. Kreislaufforsch.* **29:** 313 (May 1) 1937.

As to the desirability of the amplification, graphic recording of sounds is impossible without it. In turn, the importance of sound registration has been stressed by many prominent cardiologists:

Cabot, R. C.: A Multiple Electrical Stethoscope for Teaching Purposes, THE JOURNAL, July 28, 1923, p. 298.
Groedel, F. M.: *Verhandl. Deutsche Gesellsch. f. inn. Med.* **41:** 372, 1929.
Wohlers, H., and Duchosal, P.: *Arch. méd. d. mal. du cœur* **25:** 1, 1932.
Trendelenburg, F.: *Med. Klin.* **28:** 146, 1932.
Sacks, H. A., and Marquis, Harold: *Proc. Soc. Exper. Biol. & Med.* **32:** 773 (Feb.) 1935.

Lack of space prevents enumeration of the great array of reasons why a graphic recording of sounds is desirable. Only a few can be mentioned here.

The customary method of auscultation with a stethoscope is fraught with the danger of personal equation, as the auditory perception varies greatly in different individuals. The matter becomes still more complicated by the lack of uniformity in terminology. Records obtained from the same patient at certain intervals enable the physician to follow the evolution of the condition and the effect of therapeutic measures. Some amplifying and recording devices offer facilities for a simultaneous auscultation of heart sounds by more than one person, so that an immediate comment or interpretation is possible. Tracings of heart sounds offer ample opportunity for investigations of theoretically and practically important cardiologic problems.

Apparatus for amplification and registration of heart sounds have been simplified to such an extent that they can be used not only in scientific laboratories but also by practicing physicians. Not the apparatus, be it a common stethoscope or an amplifying device, but the auscultating physician makes the diagnosis.

JOSEPH K. NARAT, M.D., Chicago.

This letter was sent to Dr. Macfarlan, who replies:

*To the Editor:*—My article dealt primarily with the acoustic characteristics of stethoscopes used in general practice, and it brought out the fact that they do not amplify sound. The statement under criticism, "Amplification of heart and lung sounds is neither practical, nor desirable, nor needed for the physician with normal hearing," is challenged by your correspondent, who states that amplification is desirable as being (1) possible of graphic recording (2) or in showing fine differences (*a*) unaffected by the "danger of the personal equation" and (*b*) the complication of "lack of uniformity in terminology." Undoubtedly, acoustic analysis of heart and chest sounds will advance to a science, but it will have to pass through a long period of development similar to the study of hearing across the frequency range. The latter has been intensively considered by a small group of otologists for at least ten years and is not yet out of the fog. Any of these workers will agree that the findings vary enormously with the type of instrument used in the testing (see the article by Austin A. Hayden, "Hearing Aids from Otologists' Audiograms," THE JOURNAL, August 13, p. 592). Graphic recording by all human means is subject to wide variation and error, and the incapacities of audion circuits and phonograph recordings are fully as objectionable as the personal equation present when the trained examiner is listening to the heart or lungs either without an instrument or with the common stethoscope.

Until a time when electrical amplification is perfected, I would say that I would not modify the statement "amplification of heart and lung sounds is neither practical, nor desirable, nor needed for the physician with normal hearing."

Since the publication of the original article, I have had many letters from physicians who get their best information from the use of the unaided ear. A number of them decry the substitution of instruments for trained observation, and it is worth recalling that in the human ear itself we have a mechanism infinitely more delicate than any instrument, to determine variation in the character and quality of sound.

DOUGLAS MACFARLAN, M.D., Philadelphia.

## INTENSIVE TREATMENT OF SYPHILIS

*To the Editor:*—In the Paris letters March 12 and June 25, published respectively in THE JOURNAL April 9 and July 23, appeared reports under the title "The Intensive Treatment of Syphilis." These reports emanated from Dr. Arnault Tzanch and Dr. Paul Chevallier. These authors are using massive doses of arsphenamine in the treatment of syphilis, using the drip method. One death is reported in their series. My purpose in this communication is to call attention to two points:

1. No mention is made by these authors of my prior work done in association with Dr. Louis Chargin and Dr. William Leifer (The Application of the Intravenous Drip Method to Chemotherapy as Illustrated by Massive Doses of Arsphenamine in the Treatment of Early Syphilis, THE JOURNAL, March 16, 1935, pp. 878-883). This is the more curious since in the official journal of the hospitals of Paris (*La sémaine des Hôpitaux de Paris* in its issue of June 1, 1935, No. 11, pp. 328 to 335, under the title "Le goutte à goutte intraveineux en Amerique" by Dr. M. Ph. Dally) every bit of work I did on the intravenous drip has been abstracted, in most instances by literal translation, and on page 333 saying: "Le goutte à goutte a été essayé dans la syphilis, par Chargin et Leifer. Vingt-cinq hommes, en état

de syphilis primaire ou secondaire, recurrent pendant cinq jours en moyenne 4 gr. d'arséno-benzol, sans autre reaction qu'une fièvre quelquefois alarmante. Dans 95% des cas observés après cette stérilisation, le Wassermann resta negatif pendant trois mois, bien qu'aucune autre médication n'ait été employée. Mais ces essais, si encourageants qu'ils soient, sont encore à l'état expérimental."

2. More important is the fact that these workers are not following either the indications for treatment, the selection of patients or the technic which I described. Hence this work must not be confused with my work, which is in the process of more extensive confirmation and concerning which I shall publish a report at greater length at a later date when I have completed my plan of study.

HAROLD THOMAS HYMAN, M.D., New York.

## Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

### ACUTE ALCOHOLISM AND ANESTHESIA

*To the Editor:*—If a person is so completely under the influence of liquor as to be unconscious, could or would an anesthetic be administered to the person before complete recovery from intoxication, before an operation could be performed? One of the members of my office staff asked me this question, but I could not give him an answer. M.D., Illinois.

ANSWER.—A person who has become unconscious from the influence of too much alcohol is not a safe candidate for inhalation anesthesia or for general anesthetics administered by the rectal or intravenous route. Any person in this condition from the effects of alcohol is in a state of toxemia and more than likely the blood pressure is low, the patient's skin is moist and pallid and general anesthesia by inhalation or other route would be a definite hazard. One could not predict what the effect of a general anesthetic agent would be on the patient's cardiac mechanism or on the higher cerebral centers but it would probably be unfavorable. Minor surgical procedures can be, and have been, done on persons unconscious from the effects of too much alcohol, and the judicious use of local anesthesia may be tried if it is necessary. If the operation to be performed on a patient unconscious from the influence of alcohol must be done under general anesthesia, it is best to wait until the patient has recovered from the effects of the alcoholic excess. If the operation on the patient in this condition is one which requires immediate attention, regional methods of anesthesia should be employed. The usual supportive measures (administration of stimulants and intravenous administration of fluids) should be used.

### ARE FROGS POISONOUS TO EAT?

*To the Editor:*—I have three patients who had symptoms confined to the urinary tract with albumin and blood in the urine after eating green frogs. Are there any frogs which are poisonous to eat and do you think frogs are a factor in these cases? M.B., Canada.

ANSWER.—It is difficult to answer this inquiry because adequate information regarding the variety of frog eaten and the method of preparation is lacking.

The green or spring frog (Rana clamitans), which is commonly found in abundance in eastern North America from the Gulf of Mexico to Hudson Bay, is considered an edible variety. This frog is described by Wright (Frogs: Their Natural History and Utilization, U. S. Dept. of Commerce, Bureau of Fisheries, Document 888, 1920) as having two ridges down its back. "The forward upper parts are bright green; the posterior region brown or olive. The under parts are white, with some marbling; in the male the throat is yellow. This species reaches 3½ to 4 inches in length. . . ." It is understood, however, that several other varieties occurring in various parts of the United States are also commonly known as green frogs, and that, in general, the green frog is not as widely used for food as the bullfrog or the spotted, or leopard, frog.

A search of the medical literature has revealed no reports of toxicity resulting from eating any variety of cooked frogs' legs. Opinions regarding the edibility of any particular variety appear to be based chiefly on size and relative abundance. Of course the possibility of spoilage or of contamination by the toxins of the skin of improperly dressed frogs should be considered. However, there appears to be no available evidence that any variety of frogs' legs is toxic when properly skinned and cooked.

### ORAL IMMUNIZATION FOR TYPHOID

*To the Editor:*—What is the present status of oral immunization against typhoid? H. C. WIGER, M.D., Rice Lake, Wis.

ANSWER.—The work of Besredka was primarily responsible for initiating the use of oral typhoid vaccine. Essentially his claim was that, in addition to general immunity to bacteria, it is possible to produce immune bodies in the tissues locally. So far as the intestine is concerned, he felt that the preliminary treatment of bacteria with bile facilitates this mechanism.

Most of the statistical data presented in the various papers show evidence of difficulty in control. The papers deal principally with epidemics and are for the most part obviously poorly controlled. The laboratory work with animals, on the contrary, was usually satisfactory. However, even when agglutinins were obtained, it is obvious that the satisfactory production of these immune bodies in experimental animals is not necessarily conclusive evidence of the production of true immunity in man.

Judging from the available evidence, it would seem that oral vaccination should be eliminated entirely as a method of treatment. As a means of preventive immunization, however, it may be justifiable to use it in those instances in which the subcutaneous method is not practicable.

Pending more conclusive evidence for the value of oral typhoid vaccination, commercially available products have not been accepted by the Council on Pharmacy and Chemistry.

### PLEURISY WITH EFFUSION AND SYPHILIS

*To the Editor:*—A Negro aged 25, having right pleurisy with effusion, gives no history of contact to tuberculosis. His Mantoux test is negative to tuberculin both 1: 5,000 and 1: 100. He had a chancre three years ago, for which he received treatment for only three months. His blood Wassermann reaction, as well as the complement fixation test for syphilis on the pleural fluid, is 4 plus. A roentgenogram taken after tapping is negative for parenchymal involvement of the controlateral lung as well as of the lung area above the fluid level. Could one positively exclude tuberculous infection, assuming that the technic of the Mantoux test is correct? Is one justified in making a diagnosis of syphilitic pleurisy with effusion, should such an entity exist? Is it possible for pleural fluid of a tuberculous pleurisy to give a positive complement fixation test for syphilis? M.D., New Jersey.

ANSWER.—It would be impossible absolutely to exclude tuberculosis on the basis of the negative tuberculin test. No biologic test is 100 per cent accurate and there is the occasional person with definite tuberculosis whose tissues apparently are not sensitized sufficiently to tuberculoprotein to react to the tuberculin test. Probably this group does not constitute more than 1 or 2 per cent of infected persons. A similar situation has been known since 1893 to exist among animals. In extensive disease of an acute nature which is overwhelming, either in patients who are nearing death with chronic disease or in patients with acute diseases such as meningitis, pneumonia and generalized miliary disease, the tissues become desensitized and thereafter fail to react to the tuberculin test. However, with no manifestation of clinical lesions except pleurisy with effusion such desensitization should not have occurred. It would be worth while to centrifuge some of the fluid and stain the sediment for tubercle bacilli. If they are not found, Corper's medium might be used to advantage for the growth of cultures or animals might be inoculated. In this manner tuberculosis can be reasonably well ruled out if no positive observations result.

It is possible that beneath the fluid level a lesion exists in the lung which might be due to any one of a number of infections. Complete removal of the fluid, followed by x-ray film examination, should determine this with a reasonable degree of accuracy. It is possible for a gumma to be present in the lung and associated with the pleural effusion. However, gumma of the lung apparently is a rare condition and difficult to diagnose accurately. Diagnosis is sometimes made wholly on the response to antisyphilitic treatment. Either gumma of

the lung or basal lobe tuberculosis would cast a shadow on the x-ray film after the fluid is removed if the lesion is macroscopic.

Pleurisy with effusion caused by Spirochaeta pallida per se apparently is an extremely rare condition; otherwise one would expect to find reports concerning it in medical literature. Therefore one would need more evidence than a four plus complement fixation test for syphilis on the pleural fluid, since fluid removed from any serous cavity of a syphilitic patient might show such a reaction even though the immediate cause of the accumulation of fluid was not syphilis.

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## ALLERGY FROM YELLOW JACKET STING

*To the Editor:*—A druggist aged 65 says he was stung by a hornet when 12 years old and was unconscious for an hour. He has had good health ever since except for an attack of pneumonia about eighteen years ago which terminated with empyema and rib resection. He has been robust since recovery. Two years ago he was stung by a yellow jacket and was unconscious for twenty minutes. A few days ago he was again stung by a yellow jacket. He was unconscious for more than two hours and has felt miserable ever since. He was alone when this occurred, and when he regained consciousness he could not speak for quite a while. A gummy-like perspiration stood out all over him and his clothing was saturated. I did not see him at either time so I cannot give definite data as to pulse or blood pressure. Please discuss this condition with reference to treatment. It took from ten to fifteen minutes each time after being stung before he became helpless. If he could carry something with him for a prophylactic he would have time to use it. Honey bees and bumblebees do not affect him in the same way.

A. J. FAWCETT, M.D., Glendale, Ore.

ANSWER.—The case described is unquestionably an instance of anaphylactic-like shock from sensitiveness to bee sting. A number of such cases have been reported. Most of the case reports mention the honey bee as the source of allergy. Many others do not specify the species of bee involved. It is not surprising that there should be such a high grade specificity in the patient so that he would be allergic to the hornet and yellow jacket and not to the honey bee or bumble bee. Among the first authentic cases on record are those of Waterhouse (*Lancet* **1**:946, 1914) and Hubert (*Lyon méd.* **138**:678, 1926). In experiments on bee sensitive individuals Benson and Semenor (*J. Allergy* **1**:105 [Jan.] 1930) found that the allergy is not one of specificity to be venom but rather an allergy to the protein of the whole bee. There are several reports dealing with the effectiveness of specific desensitization of these bee sensitive individuals with an extract made from the bees. The following references will be worth while in that connection: Braun (*S. African M. Rec.* **23**:408 [Sept. 26] 1925); Benson and Semenor (*J. Allergy* **1**:105 [Jan.] 1934). One might consider such specific treatment in the case cited in the query. However, because of the infrequency of these attacks and because of lack of occupational exposure, such treatment would probably be unpractical. The use of a hypodermic injection (0.5 cc. of 1:1,000) of epinephrine hydrochloride immediately after the bee sting might minimize the allergic reaction to a considerable extent.

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## PERNICIOUS ANEMIA AND DIARRHEA

*To the Editor:*—A married woman aged 59 was operated on for exophthalmic goiter in 1928 and had pernicious anemia in 1933. Since then she has taken two capsules of extralin three times a day, weekly intramuscular injections of concentrated liver extracts, reduced iron and twenty drops of diluted hydrochloric acid. Recently she had explosive watery stools, as frequent as six a day. The blood count on July 5 showed hemoglobin 84 per cent, erythrocytes 4,350,000, leukocytes 10,000, color index 0.9 plus with a differential count of neutrophils 46 per cent, eosinophils 3 per cent, small lymphocytes 43 per cent, large lymphocytes 4 per cent, metamyelocytes 4 per cent, erythrocytes normal. Can you suggest treatment to overcome watery stools? M.D., Pennsylvania.

ANSWER.—Whether the diarrhea in this case is related to the anemia or to the treatment the patient is receiving is not clear. The stools should be examined for such conditions as amebic dysentery and the possibility of carcinoma of the colon should be considered. The only possible explanations on the basis of the data given are that: 1. The diarrhea may be related to the iron. This is not likely, since the patient has taken iron for several years without symptoms. 2. The diarrhea may be on a vitamin deficiency basis. A deficiency in vitamin B is sometimes seen accompanying pernicious anemia. This can be remedied by giving an ounce of brewers' yeast three times daily or by using relatively unconcentrated liver extracts. Many of the newer ultraconcentrates do not contain the substance necessary to stop the diarrhea in vitamin B deficiencies. 3. The diarrhea may be related to the lack of acid in the stomach; in this case an increased dosage of hydrochloric acid might be given with advantage.

## LONG CONTINUED ATTACKS OF EPIGASTRIC PAIN AND VOMITING

*To the Editor:*—An insurance agent, aged 52, married, had a mastoid operation at 25. When about 30 years old he began having attacks of epigastric pain accompanied by vomiting. An appendectomy failed to give relief. Ever since this time, at intervals of from a few weeks to six months, he has had attacks of epigastric pain of increasing severity. Profuse secretion of saliva precedes vomiting a half hour to an hour. The vomitus is at first stomach contents followed by the contents of the duodenum. The pain in the epigastrium is severe and during some of the attacks vomiting occurs every fifteen minutes and has lasted several days. Occasionally there is remission of two days with recurrence of the pain and vomiting. The patient is well nourished and if free from attacks for several months gains weight rapidly. The heart and lungs are normal and the head and neck are normal aside from the scar from the mastoidectomy. There is no abdominal tenderness except during an attack, when it is confined to an area 5 cm. in diameter slightly to the right of the midline and just below the costal margin. The urine is normal and the Wassermann reaction negative. The basal metabolic rate is from minus 24 to minus 16. X-ray examination of the gastrointestinal tract and the gall bladder (dye administered) is negative. Chemical examination of the stomach contents shows no free or combined hydrochloric acid. Blood counts are normal. The blood chemistry is negative. The patient has received thyroid, diluted hydrochloric acid and phenobarbital without relief. Any information you can offer regarding diagnosis or treatment will be appreciated. M.D., California.

ANSWER.—The occurrence of epigastric pain and vomiting over a period of twenty-two years without physical deterioration argues against serious organic disease. A food sensitization should be ruled out. Sea foods, certain nuts and fruits are notorious offenders and many other foods have been implicated. Has any relationship between the ingestion of certain foods and the attacks been noted? Patch tests might be helpful.

Salivation for a considerable period before the vomiting suggests the possibility of a diaphragmatic hernia or an esophageal diverticulum. Both of these conditions may produce reflex pylorospasm and vomiting. A small hernia through the esophageal opening might easily escape detection. Such a hernia is best demonstrated by examining fluoroscopically following the ingestion of barium sulfate and with the patient in the Trendelenburg position. The intermittence of the attacks would be based on the assumption that the abdominal contents did not constantly protrude through the esophageal orifice. The less likely esophageal diverticulum should be sought for by fluoroscopy at various angles. Osteo-arthritis of the spine has been known to produce spasm of the gastrointestinal tract through irritation of the sympathetic nerves. This possibility seems unlikely in this instance, but is worth consideration.

The other common causes of vomiting in the absence of gastrointestinal disease seem fairly well ruled out either by the examination or by the time the condition has persisted. Among these causes are gallbladder and kidney stone, movable kidney, intestinal parasites, brain tumor, myelitis, tabes and various intoxications.

The achlorhydria requires further consideration. If the achlorhydria is complete and continuous, one must consider the various causes of this condition. In view of the relatively good health between the attacks, it seems unlikely that a continuous achlorhydria exists. Before it is assumed that such is the case, the secretory apparatus should be stimulated with alcohol or with histamine.

Lastly, nervous vomiting must be considered. There is no doubt that in an individual with a certain neurogenic background emotional stress will produce such a picture as is described. The anacidity might be explained on a similar basis. It should be remembered that this diagnosis should not be made until all organic causes have been ruled out.

Intelligent suggestions for treatment cannot be made until a satisfactory diagnosis is achieved.

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## TESTS FOR SPIROCHETAL JAUNDICE

*To the Editor:*—How should one prepare a specimen of blood for darkfield examination for Leptospira icterohaemorrhagiae of Weil's disease? These organisms are found in the blood during the first week or before the onset of icterus. SAMUEL IRGANG, M.D., New York.

ANSWER.—Considerable difference of opinion exists concerning the reliability and the technic of diagnosing Weil's disease by the darkfield demonstration of spirochetes (Leptospira icterohaemorrhagiae) in human blood. There is no generally accepted method of performing this test. Best results are secured during the first five days of the disease.

The following methods can be tried: 1. Examine fresh citrated whole blood directly. 2. Centrifuge fresh citrated blood at a speed just sufficient to precipitate the blood cells and examine a thick layer of the supernatant plasma. It has been shown that high speeds are necessary to precipitate the spirochetes. 3. Separate the blood cells by the aforementioned method.

Centrifuge the plasma at high speed (3,500 revolutions per minute) for several minutes, remove a portion of the supernatant plasma and repeat several times. In this manner it may be possible to concentrate the spirochetes from the original volume of blood into a cubic centimeter of plasma, thus rendering their detection easier.

A positive test confirms the diagnosis of Weil's disease. A negative test proves nothing, since many investigators have failed to demonstrate spirochetes by this method in proved cases of Weil's disease.

Beginning about the tenth day and increasing until the twentieth day, spirochetes appear in the urine and may occasionally be demonstrated by darkfield examination of the sediment from 50 cc. of freshly voided urine.

Weil's disease presents such a variable clinical picture that laboratory procedures should confirm or reject every clinical suspicion of its presence. Unfortunately many laboratories are not equipped for this type of work. If the darkfield examination proves unsuccessful, other tests should be tried. These include (1) inoculation of blood or urine into guinea pigs, (2) culture of the patient's blood, (3) agglutination procedures (positive in increasing titer after the sixth to eighth day of the disease), (4) the complement fixation test, (5) the precipitation test and (6) the adhesion test.

The following papers review the present status of Weil's disease in the United States and contain references to the extensive literature:

Gaines, A. R., and Johnson, R. P.: Weil's Disease, *Arch. Int. Med.* **60**: 817 (Nov.) 1937.

Jeghers, H. J.; Houghton, J. D., and Foley, J. A.: Weil's Disease, *Arch. Path.* **20**: 447 (Sept.) 1935.

## LICE FROM SWIMMING POOL

*To the Editor:*—Please inform me whether one would be likely to pick up head lice in a swimming pool. The theory advanced is that head lice will leave the human head when submerged in water. There has been an epidemic of head lice among children using a local pool.

M.D., New Jersey.

ANSWER.—Yes, a swimming pool might be a good source of pediculosis capitis among children, whether the lice swim or stay on the head, for children in play handle each others' heads and swap caps. No child with head lice should be admitted to a swimming pool or any other playground.

## "CREOSOTE OIL" IN CONJUNCTIVA

*To the Editor:*—In the process of creosoting lumber, the creosote oil often gets into the eyes of the workers. This seems to be quite painful but does not result in serious injury. An oily solution seems to be the best thing to use, as creosote will not mix with water. What is the correct treatment?

M.D., Michigan.

ANSWER.—"Creosote oil" is the name generally applied to the fraction of the coal tar distillate which boils between 200 and 300 C. According to the specifications pertaining to the physical characteristics is a clause that "creosote oil" must contain from 8 to 10 per cent of the phenols as shown by extraction with sodium hydroxide solution. Among other substances in this greenish yellow fluorescent liquid are naphthalene, anthracene, pyridine, quinoline and acridine. Some of these are water soluble while others are not, but all are irritating to the conjunctiva. Consequently it is impossible to say which of the constituents in "creosote oil" cause the conjunctival irritation and which solvent is proper. But as in the case of any other irritating chemical substance that enters the conjunctival sac, mechanical flushing is of greater value than the use of a solvent which in itself may be irritating.

## PRESCRIPTION WRITING

*To the Editor:*—For years I have been using the British method for prescribing solutions; e. g., dilaudid, gr. 1/64; ammonii chloridi, gr. ii; syrupi cerasi ad 3i; M mitte doses, No. xxxii Sig 3i every 3 hours for cough. I have been criticized by a pharmacist for using this method. If it is right to use this method for pills, capsules and powders, why not for liquids?

M.D., Massachusetts.

ANSWER.—Writing for single doses in prescriptions, whether for liquid or solid medication form, is decidedly objectionable if for no other reason than that the necessary multiplication must be carried out by the pharmacist, who might have no one to check him in case he makes a mistake. When the physician does his full duty by the prescription and writes it in its finished form, including the necessary multiplication, two checks are exerted on a possible mistake in calculation: by the physician in his "proof reading" of the prescription and by the pharmacist who will, if he has any doubt, actually divide the total quantity by the prescribed number of doses to make sure that no mistake has been made. If the patient dies in consequence of a mistake, the misfortune is just as great whether it is the doctor's or the druggist's fault, and it is less likely to happen if both bear the responsibilities as they should. Medical teachers sometimes call the simple dose method of prescribing the "lazy doctor's document."

## HARDENING SKIN OF HANDS?

*To the Editor:*—The girls working in an industry in Easton are subject to numerous blisters and defoliation of the skin as a result of taping coils with a plain untreated cotton tape. This tape is wrapped about the coil, each turn of the tape overlapping the preceding turn. The girls pull firmly on the tape at each turn, and the subsequent friction causes the blistering and lacerations. Could you suggest any hardening or toughening solution for the fingers? It is my understanding that pugilists use a strong briny solution for this purpose.

JOHN HOWELL WEST, M.D., Easton, Pa.

ANSWER.—It is true that prize fighters soak their fists in brine to toughen them. Whether this is a practical solution of the problem is not at all certain. Experiment is necessary to decide. Care must be taken that the brine salt is not allowed to crystallize on the skin, for salt crystals are definitely harmful. Fish picklers, those who prepare gut for violin strings and other purposes and those who pack ice cream in rock salt and ice have chronic ulcers, called "salt holes," and various infections of the skin. Rinsing with water and the use of fats on the skin protect against this harmful action.

## UNEQUALLY DEVELOPED BREASTS AND MENSTRUAL IRREGULARITY IN GIRL

*To the Editor:*—A girl aged 15 complains of menstrual irregularity and of unequal development of the breasts. She is 63 inches (160 cm.) tall, weighs 132 pounds (60 Kg.) and has a blood pressure of 128 systolic, 80 diastolic and a heart rate of 72. She has been menstruating for two and one-half years, her periods being from five to six weeks apart. The flow is moderate, lasting from four to five days; she has no cramps and doesn't pass any clots. She is well developed and has a fair growth of hair on the upper lip. The thyroid gland is not enlarged. The chest is symmetrical. The right breast is rather large, with a moderately well developed areola. The nipple is inverted. The left breast is about a fourth the size of the right and has the appearance of an 11 or 12 year old girl's breast. The nipple is not well developed and is inverted. There is some tendency toward a panniculus adiposus in the lower part of the abdomen. The pubic hair and external genitalia are normal. Rectal examination shows a retroverted uterus of normal size for the patient's age. The parents of the patient are both of small stature. An older sister is only 4 feet 11 inches (150 cm.) tall and has a low basal metabolic rate and some menstrual irregularity. A younger brother is below normal in weight and height for his age, although x-ray examination of the wrist bones shows normal development for his age. He is mentally alert but his mother states that he is slow in coming to in the morning and also slow in performing given tasks. Further inquiries in the family history elicited the fact that the patient has a cousin with unequally developed breasts. What course should be followed to equalize the breasts? What suggestions can be given for the correction of the menstrual irregularity?

M.D., Missouri.

ANSWER.—There is no safe way to attempt to equalize this patient's breasts except by surgical means and this is surely not advisable. If one breast were of huge proportions, a surgical operation might be justified but not otherwise. There is likewise no need to attempt to correct the patient's menstrual irregularity because it will do no harm to leave it as it is. Even if the prolonged menstrual interval persists for a year, there is still no reason to attempt to change it.

## TORTICOLLIS IN INFANT

*To the Editor:*—A girl, 1 month old, delivered with low forceps, is found to have a rigid sternocleidomastoid with slight torticollis. What is your opinion as to the best time to operate and the best operative and postoperative procedures? The baby now weighs 8 pounds (3.6 Kg.); her birth weight was 7 pounds (3.2 Kg.). She now gets only bottle feedings.

M.D., Illinois.

ANSWER.—Torticollis due to hemorrhage within the sternocleidomastoid muscle is treated in the infant by gentle passive stretching of the head into an overcorrected position, to be done several times daily. This will frequently prevent permanent contracture and deformity. If the hemorrhage has extensively destroyed the muscle fibers and fibrosis occurs, it may later be necessary to sever the shortened fibrous bands. Usually this procedure can be delayed until after the first year. When surgical treatment is necessary it is best done by exposure of the sternal and clavicular ends of the fibrosed muscle, all contracted fibrous bands being severed. Postoperatively a plaster dressing which holds the head in an overcorrected position is used for a period of from three to six weeks. Passive and active stretching should be continued until there is no tendency for recurrence of the contracture.

### EPIDEMIC DIARRHEA OF NEWBORN

*To the Editor:*—Last week I referred a case of infant feeding to a pediatrician in Omaha who stated that the epidemic of infant deaths in a Chicago hospital last fall, given so much attention in the newspapers, was due to Karo syrup. Was there any such report filed or made in the final summary by the people who had those deaths under investigation? At the University Hospital at Iowa City Karo syrup has been used extensively in the past, but I have had no occasion to ask about it lately. It was rather a jolt to me to hear this, and being ignorant about the matter I turn to you for advice.

J. CLARK COOPER, M.D., Villisca, Iowa.

ANSWER.—In the recent epidemic of diarrhea in the newborn, which occurred in a Chicago hospital, careful investigations failed to reveal the exact cause.

There was no evidence obtained that the condition was due to the use of any specific type of food, either carbohydrate or milk itself. Although several types of organisms were isolated from the stools and at necropsy, none of these were proved causative.

Several of the infants who suffered from the disease were completely breast fed. Others, while artificially fed, did not receive Karo syrup. Several types of sugar were employed.

A careful search of the literature has failed to reveal any outbreaks of epidemic diarrhea due to the syrup mentioned.

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### EVIPAL SODIUM RECTALLY

*To the Editor:*—Referring to Dr. Alfred E. Jones's article on Basal Anesthesia: The Use of Evipal by Rectum in THE JOURNAL April 30, I should like to ask the following question: If evipal sodium is destroyed by the liver, why is a 3 Gm. dose by rectum, which is absorbed by the portal circulation, not more dangerous than 1 Gm. by vein, which has to go through the systemic circulation before reaching the liver?

D. W. MATTHAEI, M.D., Fessenden, N. D.

ANSWER.—If 3 Gm. of evipal sodium is placed in the portal circulation at one time, as by direct injection into one of the hemorrhoidal veins, it would certainly be more dangerous than 1 Gm. injected into the cubital vein. Since 3 Gm. by rectum is even less toxic than 1 Gm. intravenously, the answer is that the drug is absorbed more slowly and therefore reaches the liver more slowly by the rectal route than when administered intravenously.

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### POSSIBLE HARM FROM SODIUM BICARBONATE

*To the Editor:*—Sodium bicarbonate will tarnish metal. How many grains may be taken on an empty stomach without injury?

M.D., New Jersey.

ANSWER.—Sodium bicarbonate is, on the whole, quite a harmless substance even when taken on an empty stomach. It is indeed taken with benefit by many sufferers from gastric catarrh and the usual dose in such cases is 1 Gm. (15 grains) in a cup of water as hot as one can drink it. Much larger doses are used in acidosis. When taken in teaspoonful doses and before each meal by a patient there is a possibility that the effect of the alkali on the system may lead to alkalosis.

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### INTRASPINAL THIAMIN CHLORIDE

*To the Editor:*—In Queries and Minor Notes (THE JOURNAL, May 28) mention is made of the danger of intraspinal injection of thiamin chloride. In my preliminary report entitled "The Intraspinal (Subarachnoid) Injection of Vitamin $B_1$ for the Relief of Intractable Pain and for Inflammatory and Degenerative Diseases of the Central Nervous System," which appeared in the *American Journal of Surgery* **39**: 495 [March] 1938), emphasis was laid on the possibility of vitamin $B_1$ poisoning from overdosage and the possible harmful effects of using thiamin chloride not especially prepared for intraspinal injection. It might be well to emphasize again the precautions mentioned in this article. It might be helpful to call attention to my article on this subject for the details of the rationale and plan of treatment in cases of multiple sclerosis. To date I have given 201 intraspinal injections of vitamin $B_1$ without a single fatality.

ELIAS L. STERN, M.D., New York.

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### NICOTINE IN CIGARETS—A CORRECTION

In Queries and Minor Notes, August 6, page 560, under the title "Nicotine in Cigarets" it is stated: "If one cigaret fell into a bottle of milk, the amount of nicotine extracted would hardly exceed 2 mg." This should have read: "If one cigaret fell into a bottle of milk, the amount of nicotine extracted would approximate 20 mg. This amount of nicotine, as well as some of the other extractives which would go into solution in the milk, would result in nausea before any toxic effects would develop and therefore the effect would probably not be particularly harmful."

# *Medical Examinations and Licensure*

## COMING EXAMINATIONS

### STATE AND TERRITORIAL BOARDS

ALABAMA: Montgomery, June 20-22. Sec., Dr. J. N. Baker, 517 Dexter Ave., Montgomery.

ARIZONA: *Basic Science.* Tucson, Sept. 20. Sec., Dr. Robert L. Nugent, Science Hall, University of Arizona, Tucson.

ARKANSAS: *Medical (Regular).* Little Rock, Nov. 3-4. Sec., State Medical Board of the Arkansas Medical Society, Dr. L. J. Kosminsky, Texarkana. *Medical (Eclectic).* Little Rock, Nov. 3. Sec., Dr. Clarence H. Young, 1415 Main St., Little Rock. *Basic Science.* Little Rock, Nov. 7. Sec., Mr. Louis E. Gebauer, 701 Main St., Little Rock.

CALIFORNIA: *Reciprocity.* Los Angeles, Nov. 16. *Written examination.* Sacramento, Oct. 17-20. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

COLORADO: Denver, Oct. 5-7. Sec., Dr. Harvey W. Snyder, 831 Republic Bldg., Denver.

CONNECTICUT: *Basic Science.* New Haven, Oct. 8. *Prerequisite to license examination.* Address State Board of Healing Arts, 1895 Yale Station, New Haven. *Medical (Regular).* Hartford, Nov. 8-9. Sec., Dr. Thomas P. Murdock, 147 W. Main St., Meriden. *Medical (Homeopathic).* Derby, Nov. 8-9. Sec., Dr. Joseph H. Evans, 1488 Chapel St., New Haven.

DELAWARE: Dover, July 11-13. Sec., Medical Council of Delaware, Dr. Joseph S. McDaniel, 229 S. State St., Dover.

DISTRICT OF COLUMBIA: *Basic Science.* Washington, Dec. 26-27. *Medical.* Washington, Jan. 9-10. Sec., Commission on Licensure, Dr. George C. Ruhland, 203 District Bldg., Washington.

FLORIDA: Jacksonville, Nov. 14-15. Sec., Dr. William M. Rowlett, Box 786, Tampa.

GEORGIA: Atlanta, Oct. 11-12. Joint-Sec., State Examining Boards, Mr. R. C. Coleman, 111 State Capitol, Atlanta.

HAWAII: Honolulu, Oct. 10-13. Sec., Dr. James A. Morgan, 48 Young Bldg., Honolulu.

IDAHO: Boise, Oct. 4-5. Commissioner of Law Enforcement, Hon. J. L. Balderston, 205 State House, Boise.

ILLINOIS: Chicago, Oct. 18-20. Superintendent of Registration, Department of Registration and Education, Mr. Homer J. Byrd, Springfield.

INDIANA: Indianapolis, June 20-22. Sec., Board of Medical Registration and Examination, Dr. J. W. Bowers, 301 State House, Indianapolis.

IOWA: *Basic Science.* Des Moines, Oct. 11. Corres. Sec., Mr. H. W. Grefe, Capitol Bldg., Des Moines.

KENTUCKY: Louisville, Dec. 6-8. Sec., State Board of Health, Dr. A. T. McCormack, 620 S. Third St., Louisville.

MAINE: Portland, Nov. 8-9. Sec., Board of Registration of Medicine, Dr. Adam P. Leighton, 192 State St., Portland.

MARYLAND: *Medical (Regular).* Baltimore, Dec. 13-16. Sec., Dr. John T. O'Mara, 1215 Cathedral St., Baltimore. *Medical (Homeopathic).* Baltimore, Dec. 13-14. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

MASSACHUSETTS: Boston, Nov. 8-10. Sec., Board of Registration in Medicine, Dr. Stephen Rushmore, 413-F State House, Boston.

MICHIGAN: Lansing, Oct. 12-14. Sec., Board of Registration in Medicine, Dr. J. Earl McIntyre, 202-3-4 Hollister Bldg., Lansing.

MINNESOTA: *Basic Science.* Minneapolis, Oct. 4-5. Sec., Dr. J. Charnley McKinley, 126 Millard Hall, University of Minnesota, Minneapolis. *Medical.* Minneapolis, Oct. 18-20. Sec., Dr. Julian F. Du Bois, 350 St. Peter St., St. Paul.

MISSISSIPPI: *Reciprocity.* Jackson, December. Asst. Sec., State Board of Health, Dr. R. N. Whitfield, Jackson.

MISSOURI: Kansas City, Oct. 18-20. State Health Commissioner, Dr. Harry F. Parker, State Capitol Bldg., Jefferson City.

MONTANA: Helena, Oct. 4. Sec., Dr. S. A. Cooney, 216 Power Block, Helena.

NEBRASKA: *Basic Science.* Lincoln, Oct. 4-5. *Medical.* Lincoln, Nov. 25-26. Dir., Bureau of Examining Boards, Mrs. Clark Perkins, State House, Lincoln.

NEVADA: Carson City, Nov. 7-9. Sec., Dr. John E. Worden, Capitol Bldg., Carson City.

NEW JERSEY: Trenton, Oct. 18-19. Sec., Dr. James J. McGuire, 28 W. State St., Trenton.

NEW MEXICO: Santa Fe, Oct. 10-11. Sec., Dr. Le Grand Ward, 135 Palace Ave., Santa Fe.

NEW YORK: Albany, Buffalo, New York, and Syracuse, Sept. 19-22. Chief, Bureau of Professional Examinations, Mr. Herbert J. Hamilton, 315 Education Bldg., Albany.

NORTH CAROLINA: *Reciprocity.* December. Sec., Dr. William D. James, The Hamlet Hospital, Hamlet.

NORTH DAKOTA: Grand Forks, Jan. 3-6. Sec., Dr. G. M. Williamson, 4½ S. Third St., Grand Forks.

OKLAHOMA: *Basic Science.* Oklahoma City, Nov. 30. Sec. of State, Hon. Frank C. Carter, State Capitol Bldg., Oklahoma City. *Medical.* Oklahoma City, Dec. 14. Sec., Dr. James D. Osborn Jr., Frederick.

OREGON: *Basic Science.* Portland, Nov. 19. Sec., State Board of Higher Education, Mr. Charles D. Byrne, University of Oregon, Eugene.

PENNSYLVANIA: Philadelphia, January. Sec., Board of Medical Education and Licensure, Dr. James A. Newpher, 400 Education Bldg., Harrisburg.

RHODE ISLAND: Providence, Oct. 6-7. Chief, Division of Examiners, Mr. Robert D. Wholey, 366 State Office Bldg., Providence.

SOUTH CAROLINA: Columbia, Nov. 8. Sec., Dr. A. Earle Boozer, 505 Saluda Ave., Columbia.

SOUTH DAKOTA: Pierre, Jan. 17-18. Director of Medical Licensure, Dr. B. A. Dyar, State Board of Health, Pierre.

TENNESSEE: Memphis, Sept. 28-29. Sec., Dr. H. W. Qualls, 130 Madison Ave., Memphis.

VERMONT: Burlington, Feb. 14. Sec., Board of Medical Registration, Dr. W. Scott Nay, Underhill.

VIRGINIA: Richmond, Dec. 14-16. Sec., Dr. J. W. Preston, 30½ Franklin Road, Roanoke.

WEST VIRGINIA: Bluefield, Oct. 31-Nov. 2. Sec., Public Health Council, Dr. Arthur E. McClue, State Capitol, Charleston.

WISCONSIN: *Basic Science.* Madison, Sept. 24. Sec., Prof. Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee. *Medical.* Madison, Jan. 10-14. Sec., Dr. Henry J. Gramling, 2203 S. Layton Blvd., Milwaukee.
WYOMING: Cheyenne, Oct. 3 (probable date). Sec., Dr. G. M. Anderson, Capitol Bldg., Cheyenne.

### NATIONAL BOARD OF MEDICAL EXAMINERS SPECIAL BOARDS

Examinations of the *National Board of Medical Examiners* and *Special Boards* were published in THE JOURNAL, September 10, page 1041.

### Nevada May Examination

Dr. John E. Worden, secretary, Nevada State Board of Medical Examiners, reports the written examination held at Carson City, May 2, 1938. The examination covered eleven subjects and included ninety-nine questions. An average of 75 per cent was required to pass. Three candidates were examined, all of whom passed. Two physicians were licensed by reciprocity after an oral examination. The following schools were represented:

| School | PASSED | Year Grad. | Per Cent |
|---|---|---|---|
| University of Southern California School of Medicine | | (1938) | 85.6 |
| Long Island College of Medicine | | (1934) | 84.4 |
| Medical College of the State of South Carolina | | (1930) | 80.9 |

| School | LICENSED BY RECIPROCITY | Year Grad. | Reciprocity with |
|---|---|---|---|
| Cornell University Medical College | | (1921) | New York |
| University of Pennsylvania School of Medicine | | (1927) | S. Dakota |

### North Carolina June Examination

Dr. B. J. Lawrence, former secretary, North Carolina State Board of Medical Examiners, reports the written examination held at Raleigh, June 13, 1938. The examination covered seven subjects. Eighty-five candidates were examined, all of whom passed. The following schools were represented:

| School | PASSED | Year Grad. | Number Passed |
|---|---|---|---|
| College of Medical Evangelists | | (1938) | 1 |
| Yale University School of Medicine | | (1928) | 1 |
| George Washington University School of Medicine | | (1938) | 1 |
| Georgetown University School of Medicine | | (1933), (1938, 2) | 3 |
| Howard Univ. College of Medicine | | (1935), (1937), (1938, 2) | 4 |
| Emory University School of Medicine | | (1936), (1938, 7) | 8 |
| University of Georgia School of Medicine | | (1938) | 1 |
| Northwestern University Medical School | | (1937) | 1 |
| Rush Medical College | | (1938) | 1 |
| University of Louisville School of Medicine | | (1937), (1938, 2) | 3 |
| Johns Hopkins University School of Medicine | | (1934), (1938, 2) | 3 |
| University of Maryland School of Medicine and College of Physicians and Surgeons | | (1938) | 1 |
| Washington University School of Medicine | | (1937) | 1 |
| Cornell University Medical College | | (1938) | 1 |
| New York University College of Medicine | | (1938, 3) | 3 |
| University of Rochester School of Medicine | | (1930) | 1 |
| Duke University School of Medicine | | (1937, 3), (1938) | 4 |
| Jefferson Medical College of Philadelphia | | (1936), (1938, 8) | 9 |
| Temple University School of Medicine | | (1938, 8) | 8 |
| University of Pennsylvania School of Medicine | | (1938, 9) | 9 |
| Woman's Medical College of Pennsylvania | | (1938, 2) | 2 |
| Medical College of the State of South Carolina | | (1938, 4) | 4 |
| Vanderbilt University School of Medicine | | (1931), (1938, 2) | 3 |
| Medical College of Virginia | | (1938, 10) | 10 |
| McGill University Faculty of Medicine | | (1937), (1938) | 2 |

Fifty-two physicians were licensed by endorsement at the meetings held May 2, June 13 and July 28. The following schools were represented:

| School | LICENSED BY ENDORSEMENT | Year Grad. | Endorsement of |
|---|---|---|---|
| Columbian University Medical Department, D. C. | | (1899) | Dist. Colum. |
| Emory University School of Medicine | | (1922) | Georgia, (1931) Virginia |
| University of Georgia School of Medicine | | (1935), (1937) | Georgia |
| University of Illinois College of Medicine | | (1934) | Missouri |
| University of Louisville Medical Department | | (1894) | Ohio |
| Tulane University of Louisiana School of Medicine | | (1925) | Tennessee |
| Johns Hopkins University School of Medicine | | (1933) | N. B. M. Ex. |
| University of Maryland School of Medicine and College of Physicians and Surgeons | | (1934) | Maryland |
| Harvard University Medical School | | (1931), (1935) | N. B. M. Ex. |
| Tufts College Medical School | | (1934) | Connecticut |
| Univ. of Michigan Department of Medicine and Surg. | | (1913) | Michigan |
| University of Minnesota Medical School | | (1921) | Minnesota |
| Washington University School of Medicine | | (1935) | Michigan |
| Cornell University Medical College | | (1928) | New York |
| New York University, University and Bellevue Hospital Medical College | | (1928), (1934) | New York |
| New York University College of Medicine | | (1937) | New York |
| Duke University School of Medicine | | (1935) | W. Virginia, (1935, 3), (1936) N. B. M. Ex. |
| University of Cincinnati College of Medicine | | (1933), (1937) | Ohio |
| University of Pennsylvania School of Medicine | | (1933) | N. B. M. Ex. |
| University of Pittsburgh School of Medicine | | (1936) | Penna. |
| Medical College of the State of South Carolina | | (1935), (1936, 2), (1937, 2) | South Carolina |
| Meharry Medical College | | (1933), (1934) | Tennessee |
| University of Nashville Medical Department | | (1908) | Tennessee |
| University of Tennessee College of Medicine | | (1935), (1936) | Tennessee |
| Med. College of Virginia | | (1931), (1932), (1933, 2) (1937, 2) | Virginia |
| University of Virginia Department of Medicine | | (1932), (1933, 2), (1935, 2), (1936) | Virginia |
| Queen's University Faculty of Medicine | | (1931) | New York |

## Book Notices

**Handbook of Hematology.** Edited by Hal Downey, University of Minnesota Medical School, Minneapolis. In four volumes. Cloth. Price, $85 per set. Pp. 698; 699-1585; 1587-2360; 2362-3136, with 1,448 illustrations, including 50 colored plates. New York: Paul B. Hoeber, Inc., 1938.

The most monumental contribution on hematology assembled in English or in any other language has been made available by Hal Downey with the aid of an inspired publisher—the late Paul B. Hoeber. The position of hematology in modern medical practice is obviously paramount. The blood is the most important of all the tissues in the human body and is the very center of importance in relation to all manifestations of health and of disease.

In the development of the volumes, almost forty collaborators have participated. They have been given carte blanche as to the space to be occupied and as to their opinions and theories. The handbook constitutes a digest of international literature supplemented by an extensive bibliography and is in every sense an epoch-making contribution in the field of medical literature. The four volumes discuss every phase of the anatomy, physiology and pathology of the blood as well as that of the associated tissues, such as the bone marrow and the spleen, which are concerned in blood formation and blood destruction. Each of the important and well classified diseases of the blood is given special consideration and the other sections are devoted to the effects on the blood of diseases which are not primarily diseases of the blood and the blood-forming organs. There are hundreds of illustrations both in black and white and in colors.

The first section, by Raphael Isaacs, is concerned with the development, morphology, number, composition, measurement, and physical and chemical properties of the red blood cells. The second section gives a similar consideration to the leukocytes. The third section takes up the eosinophils. The fourth section considers the mast cells; the fifth section, the lymphocytes and monocytes. Then comes a consideration by Bunting of the functions of the leukocytes and a study of the blood platelets by Rosenthal, who also considered the hemorrhagic diatheses. The remainder of this volume is devoted to the supravital staining methods.

The second volume opens with a magnificent study of comparative hematology by H. E. Jordan and embryology by William Bloom. Next comes a consideration of the normal blood in infants and children and of the reticulo-endothelial system. This chapter, by the late Robert H. Jaffé, may also be listed among the classics in American medicine. Few hematologists have attained the distinction attained by Jaffé not only for fundamental knowledge but also for the ability to present information in a systematic, understandable form. The section on the reticulo-endothelial system would be well worthy of reprint as a special monograph. Dr. Downey himself discusses monocytic leukemia. Much of the remainder of the second volume is contributed by William Bloom, who discusses tissue cultures of the blood, the lymphatic tissues and the lymphatic organs. This section is supplemented by some of the finest colored illustrations that have been made available in any work on hematology.

The third volume is devoted largely to the spleen and the bone marrow, to changes that take place in these tissues, and to a consideration of the various anemias. The writers include Florence Sabin, Charles Doan, Cyrus Sturgis and Verne Mason among others. Here also the considerations and the illustrations are of the highest order.

The fourth volume is devoted to polycythemia, hemoglobin, metabolism, infectious diseases, sarcomas of the blood and many other subjects, and also provides an extensive detailed index.

The entire series of books is printed on a fine quality of enameled paper suitable to the quality of the illustrations. Obviously here is fundamental material which should be in the possession of every medical library and every medical school because it is the very foundation on which a great new specialty in medicine is developing. The editor, publisher and collaborators in this great new medical work deserve the commendation of the medical profession.

**Die Methoden der experimentellen Chemotherapie.** Von Prof. Dr. Claus Schilling, Abteilungsdirektor am Institut Robert Koch i. R. Paper. Price, 4.50 marks. Pp. 104, with 18 illustrations. Jena: Gustav Fischer, 1938.

This is a practical manual of selected methods such as might be used in organizing a chemotherapeutic institute or in a course on chemotherapeutic experiments on animals. Methods of the greatest importance in producing infections are given in detail, those little used being merely referred to; choice of chemical compounds is limited to the well tried and tested, derivatives being dealt with briefly.

The supreme law of chemotherapy, according to the author, is that the drug must not injure the host. For this reason, every therapeutic experiment must be preceded by a pharmacologic experiment which determines the minimum fatal dose and the highest tolerated dose of a drug. The aim of chemotherapy is to destroy the parasites in the host or at least to injure them so that they may be rendered harmless by the natural processes of the host. He warns that few infectious diseases in man run the same course in animals. But chemotherapeutic agents are not to be used on sick human beings until they are extensively tested on animals. Similar, though not identical, infections in animals may serve as models, experimental leprosy for instance, and yield important information.

The distribution and localization of infections must be considered by the chemotherapeutist. Although chemotherapeutic action is generally intended to be direct on the parasite, many beneficial effects are produced indirectly. Therefore the complete chemotherapeutic trial includes tests on the parasite in vitro and in vivo. The solvent or medium in which a chemotherapeutic agent is dissolved or suspended is important for the success of a test; for instance, viruses and bacteria are not injured in warm physiologic solution of sodium chloride but spirochetes and protozoa are decidedly. For the host, the medium must be indifferent. It is material to chemotherapeutic action whether the agent is injected in a true or colloid solution or is itself a crystalloid or colloid. With all such details attended to, it would seem that the chemotherapeutic experiments outlined in this book should succeed every time.

The following experimental infections with chemotherapeutic treatment are presented in the first nine chapters: bacteria, spirochetes, protozoa, helminths, rickettsia, bartonella, viruses and tumors. The last three chapters present experiments on chemotherapeutic agents, i. e. theories of action, special actions and detection in body fluids of certain agents (mercury, germanin, atabrine, arsenic, atoxyl, gold, quinine and plasmochin). The illustrations consist of simple line drawings and are used to clarify characteristic features of a piece of equipment, an organismal cycle, a pose of a mosquito or an anatomic lesion. Structural formulas and doses for different species of chemotherapeutic agents are given throughout, and at the end of the book there are separate indexes of literature and of subject matter. Altogether this is a most practical and handy book for all medical research institutes and laboratories of pharmacology, pathology and bacteriology.

**Civilization and Disease.** By C. P. Donnison, M.D., M.R.C.P. With an introduction by Sir Walter Langdon-Brown, M.A., M.D., Hon. D.Sc. Cloth. Price, $3. Pp. 222. Baltimore: William Wood & Company, 1938.

Psychoanalysis has been a stimulus to the medical investigator to compare the behavior, habits, practices and diseases of the primitive tribes in various parts of the world with the same traits and customs in the form in which they are exhibited in civilized life, from the jumping off point of analysis of mental mechanisms producing the neuroses. Since Margaret Mead and Malinowski have made studies of South Sea Island tribes with particular reference to their sexual behavior, which in turn is considered significant in giving rise to neurotic conditions, the subject is not new. The present writer has gone further. To a medical officer from primitive backwaters, the fact was stressed on his return to England that the diseases which he had observed among natives were dissimilar to those which were common in Britain. Carefully making an analysis of the proportion of various types of conditions observed under civilized modes of living and those seen in various primitive environments, he produced the present interesting and rather stimulating book. He is handicapped in comparing the diseases observed in civilization and outside it by the fact that many diseases diagnosed in natives have an atypical form. Then too it is difficult to get the cooperation of primitive persons to permit a careful examination and this, it appears, is particularly true with regard to neurosis and psychosis. Nevertheless it seems to have been possible to make a tentative study which is of some value. The author himself admits that figures, particularly those in the noncivilized group, are not forthcoming which will bear a comparison with the carefully kept statistics of Europe. Nevertheless there are some conditions which are almost never found among primitive people, for instance exophthalmic goiter. The author does point out that carcinoma is possibly more rare among the primitive people because of the fact that owing to other causes they seldom reach the age of susceptibility. Donnison goes into some discussion of particular diseases which are less frequent among primitive people and points out their etiologic background. He emphasizes a number of traits which are not particularly of cultural origin or necessarily due to civilization per se. On the other hand, dietary habits plus the strain of life under civilized conditions do, it appears to him, form an etiologic background for the higher incidence among the civilized of certain disorders. There is a good deal of discussion of the philosophic background of the anthropologic, ethnologic and perhaps the sociologic mechanisms which cause a difference between civilized and noncivilized groups. It will probably be the source of stimulation for other serious students of public health and for psychiatrists to make more valid comparisons. The volume is not particularly deep, nor does it show great conversance with either psychiatry or sociology. There are some parts which are redundant and somewhat out of place and this is particularly true of the author's rather extensive discussion of the various theories of neurosis. It must be admitted, however, that the book is well written and is interesting. While much of it may be considered controversial, it has a definite place in evaluating that borderline which lies between medicine and ethnology.

**Progressive Relaxation: A Physiological and Clinical Investigation of Muscular States and Their Significance in Psychology and Medical Practice.** By Edmund Jacobson, A.M., Ph.D., M.D., Laboratory for Clinical Physiology, Chicago. Second edition. Cloth. Price, $5. Pp. 494, with 89 illustrations. Chicago: University of Chicago Press, 1938.

In 1929, when the first edition of this book appeared, the potential value of the special relaxing procedure was recognized in the pages of THE JOURNAL. Jacobson's method of treating the emotionally maladjusted has now become fairly generally known among psychiatrists and neurologists even if it does not have quite the recognition that some of the other forms of psychotherapy have. Strictly speaking, perhaps, Jacobson's method of progressive relaxation is not a psychotherapeutic method but rather a technic of treatment which attempts to get at disease states through adjustment of the individual's neuromuscular mechanisms rather than his thinking processes. After considerable research in the field of physiology and a good deal of reading on the subject of relaxation and neuromuscular mechanisms, in 1929 Jacobson came out with this theory, which at that time was quite novel; namely, that with complete relaxation came the opportunity for the individual with disturbed kinetic function to reach an equilibrium, at least a state of rest, which would permit nature to aid him in returning to a healthy state. Jacobson emphasizes the distinction which he draws between the advice that is usually given to the patient "to relax" and the systematic procedure of guidance which enables the patient to learn for himself through subjective sensation what real relaxation is, contrasted to what the patient thinks is a state of rest, which really contains a number of active components. Jacobson makes no attempt to limit this treatment to the anxiety neuroses and those conditions which frankly are accompanied by what might be called nervous tension. As a matter of fact, he gives some statistics in the present volume which indicate that cardiovascular states and other similar disturbances of the organism which are considered definitely organic in nature can be improved by this method. The first part of the book is devoted primarily to the scientific thought behind the method, and the experiments which have been done by the author and

other students of the subject indicate that progressive relaxation might be a therapeutic medium. Accompanying this considerable space is devoted to actual procedure of administering progressive relaxation. Although the author admits that the procedure is time consuming, it does not compare (when one analyzes the amount of time that must be given to teaching the patient how to relax properly) to the conventional psychotherapeutic measures, some of which go on interminably. The middle of the book—and this part constitutes about half of its total content—is devoted to an analysis of the physiologic components of progressive relaxation. The effect of relaxation on the knee jerk, for instance, is discussed in considerable detail. In the present edition the author has added a great deal of material dealing with the measurement of relaxation and tension of muscles by means of electrical measuring devices. The detail into which he goes here is almost overwhelming. The whole procedure of relaxation becomes almost a quantitative study. The terminal chapters deal with the use of this technic with particular reference to various disorders, traumatic and psychogenic. There is some indication of the fact that in the period of almost ten years during which the author has been following this procedure it has proved itself to have considerable value in his hands. Its use by others than the author has not been particularly convincing. Nevertheless it is a procedure which should be carefully studied and analyzed and tried by the neurologist and psychiatrist, and perhaps by the self-critical physician who is aware of neuromuscular disturbances in the organic state. There is an excellent bibliography. The style is good. The book is well written and, while the reasoning may not entirely be agreed with, the presentation shows a distinct effort to emphasize the truly scientific side of the author's work on the subject.

**Tissue Reactions in Bone and Dentine: A Morpho-Biological Study of the Formation and the Dissolving of Bone and Dentine.** By Åke Wilton, M.D., Asst. Professor and Lecturer in Pathology at the Caroline Institute, Stockholm. Paper. Price, 15s. Pp. 194, with 64 illustrations. London: Henry Kimpton, 1937.

This monograph is devoted to the exposition of the hypothesis that bone and dentin changes in such diseases as rickets, achondroplasia, scurvy, experimental hyperparathyroidism, Paget's disease and osteogenesis imperfecta are markedly influenced by two factors. One of these operates on rapidly growing normal tissues particularly during the developmental stage, when proliferation is greatest, tending to arrest growth and retard orderly development (differentiation) of embryonic types of cells from youthful forms to mature ones. The other acts on fully grown, working cells in which proliferation has ceased causing a dedifferentiation of them to less mature forms (metaplasia) and followed by proliferation. It is asserted that the changes in rickets and achondroplasia are typical of the first type of change, osteogenesis imperfecta and scurvy of the second. It is apparent that the author's point of view has been greatly influenced by the work of Häggqvist and his theory of bone calcification and decalcification. The exposition is not clear enough to satisfy the needs of a person unfamiliar with research in this field, and the content hardly justifies careful study by those familiar with current investigation of the problems discussed. The translation is not wholly satisfactory.

**The Relationship Between Characteristics of Personality and Physique in Adolescents.** By P. S. de Q. Cabot, the Psychological Laboratory, Harvard University, Cambridge, Massachusetts. Genetic Psychology Monographs, 1938, Vol. XX, No. 1. Paper. Pp. 120, with 3 illustrations. Provincetown, Massachusetts: Journal Press, 1938.

The author of this little monograph points out that since the time of Hippocrates there has been a series of attempts made to point out differences in personality in relation to actual physical structure. The purpose of the present study was to see whether any particular psychologic traits were associated with specific body build. The monograph begins with a summary of the literature on the subject, and the author draws the conclusion that the information is incomplete and the statistics are poorly collected, and he comes to the conclusion that most of the observers have found relationship of mind capacity to body structure but that their conclusions are drawn from insufficient data. The study reported in the present monograph comprised sixty-two cases classified as pyknosomes, leptosomes and atheletosomes. The cases were rated by at least four teachers for each student. A classification sheet was made listing the various traits emphasized by Kretschmer, a list comprising thirty-nine questions was used to analyze each case, and a trait study was made. Other information such as physical condition and intelligence quotient was also collected. The author formulates a hypothesis of sociobiologic advantage to determine whether any particular physical build was superior to another. In general the pyknic type were found to have the most satisfactory traits for a social adjustment. This is a carefully worked out study containing thirty-six tables, the data which are contained therein being treated by psychologic statistical methods, with the drawing of fairly valid conclusions. It is an interesting study from the standpoint of emphasizing the need for caution in using body-build types to represent mental types, although there probably is some relationship.

**Arthritis, Fibrositis and Gout: A Handbook for the General Practitioner.** By Charles W. Buckley, M.D., F.R.C.P., Physician to the Devonshire Royal Hospital for Rheumatic Diseases, Buxton. Cloth. Price, 7s. 6d. Pp. 153, with 24 illustrations. London: H. K. Lewis & Co., Ltd., 1938.

The author of this little book has collected and revised a group of postgraduate lectures aimed to give the essential clinical features of those disorders commonly grouped together as chronic rheumatism and to outline methods of treatment which he has found useful. The result is a book of seventeen chapters in which are discussed briefly the classification, theories of etiology, clinical features and treatment of rheumatoid arthritis, chronic villous arthritis, osteo-arthritis, spondylitis, fibrositis and gout. The author makes no claim toward thoroughness of discussion and cites the literature only occasionally. A short bibliography, however, is given at the end. Many useful hints for treatment are included and some suggestions are made which have not yet been generally accepted.

**Neuro-Ophthalmology.** By R. Lindsay Rea, B.Sc., M.D., M.Ch., Ophthalmic Surgeon to West End Hospital for Nervous Diseases, London. Cloth. Price, $9. Pp. 568, with 161 illustrations. St. Louis: C. V. Mosby Company, 1938.

As the author points out, there is developing a close relationship between ophthalmology and neurology. Conditions revealed by examination of the nerves supplying the eye often are extremely significant in making a diagnosis of systemic disease or localized disease of the central nervous system. Since the appearance many years ago of "The Eye and Nervous System" by Posey and Spiller, no volume has specifically presented the facts needed by the neurologist so that he might more fully understand ophthalmic symptoms. It has been necessary for him to wade through textbooks on ophthalmology to find symptoms related to nervous system disease, yet even here discussions were sketchy as were those on the same subject in a neurologic book. Rea has to some extent overcome this problem. The whole of the volume is devoted to an analysis of diseases of the nervous system as manifested by ocular and extra-ocular symptoms pertaining to the visual mechanism. Discussions of neurologic symptoms manifested through the eye are relatively complete, but the parts of the book devoted to the influence of certain diseases of the nervous system on the eye are not quite as satisfactory. It is true that in his introduction the author expresses a desire to limit the size of this volume and perhaps it is justifiable to contract individual discussions of the ophthalmic conditions found in various nervous diseases, or as a result of various types of poisoning, on the basis that a thorough study of the chapters dealing with the symptoms found in the retina or in the extrinsic muscles of the eye will reveal what nervous diseases should accompany them. There is no particular novelty about the illustrations, but there are several color plates which show fundus conditions and there are a number of drawings giving perimetric results or showing pathologic conditions of one sort or another. Neuropathology is not stressed, nor is the branch of neuro-ophthalmology which is so important in this country, the medicolegal aspect of blindness, particularly that due to industrial conditions or to malingering, given any particular thought. The fact that neuro-ophthalmic symptoms and diseases having neuro-ophthalmic symptoms are discussed in one volume without particular classification makes the book a little

bit unsystematic. Some chapters are devoted to symptoms alone, such as papilledema and optic atrophy. Others are devoted to diseases alone such as the chapters on abnormality, tumors and the poisons which affect vision. Because of the fact that the book is not broken into parts dealing with these two points of view, it may be necessary for a person interested in the subject to acquaint himself thoroughly with the contents of the volume rather than using it as a reference work. There is an excellent and extensive bibliography which in itself makes the volume a desirable adjunct to the library of the neurologist; and, of course, since it is unique and carefully composed, its value to any practitioner who is interested in neuro-ophthalmology cannot be gainsaid.

**Clinical Chemistry in Practical Medicine** By C. P. Stewart, M.Sc. Ph.D., Senior Biochemist, Royal Infirmary, Edinburgh, and D. M. Dunlop, B.A., M.D., F.R.C.P.E., Christison Professor of Therapeutics and Clinical Medicine, University of Edinburgh. Second edition. Cloth. Price, $4. Pp. 372, with 38 illustrations. Baltimore: William Wood & Company, 1937.

This edition is thoroughly revised. The book has been written especially for the man in practice and its usefulness is virtually limited to that group. The authors are practical and conservative in the presentation. They have not attempted a complete discussion of the entire field of applied biochemistry but have limited themselves to the commoner and more generally useful tests. The text covers the subjects of collection and preservation of samples of blood, urine, feces and spinal fluid; basal metabolism; mechanism of neutrality regulation; glycosuria; albuminuria and tests of renal function; analysis of gastric contents; tests of hepatic function and of the cerebrospinal fluid; chemical tests in pregnancy; blood calcium and phosphorus, and the blood sedimentation rate. Technical methods are given in an appendix instead of the text. All the discussions are concise and clearly presented from the point of view of medical practice.

**Cases of Attempted Suicide in a General Hospital: A Problem in Social and Psychologic Medicine: A Report on a Local Condition, Including a Survey of 1,147 Records of Attempted Suicide Cases Admitted to the Boston City Hospital.** By Merrill Moore, M.D., Assistant Visiting Neurologist, Boston City Hospital. Reprinted from the New England Journal of Medicine, Volume CCXVII, Number 8, Pp. 291-303, August 19, 1937. Paper. Pp. 64. Boston: The Author, 1937.

This short report is an extremely interesting one and would well bear perusal by those who have to do with the operation of general hospitals and by psychiatrists. The author has recognized the fact that the increasing number of cases of attempted suicide brought into the Boston City Hospital is well worthy of study. His investigation is not particularly deep—actual mechanisms of suicide or attempted suicide are not analyzed in terms of deep psychiatry, psychoanalysis or even complicated statistical methods, but quite a number of traits are tabulated, charted, and briefly discussed in a competent fashion. Some of these traits are the age distribution, superficial motives such as economic, domestic, health and love problems, method of attempt, frequency of poisons taken by mouth, and other features which are equally interesting and significant. The author, on the basis of the observations, proposes that a large general hospital with "special protective wards" be established where each patient may be given psychiatric care and treatment. The volume is concluded with twenty-eight numbered paragraphs giving a summary of results and recommendations. There is appended to it a good bibliography.

**Methods of Tissue Culture.** By Raymond C. Parker, Ph.D., Associate in Experimental Surgery, The Rockefeller Institute for Medical Research, New York. With a foreword by Alexis Carrel, M.D. Cloth. Price, $5. Pp. 292, with 109 illustrations. New York: Paul B. Hoeber, Inc., 1938.

The preface to Dr. Parker's book expresses conservatively the fact that methods of tissue culture have been well standardized and brought down to date in Dr. Carrel's laboratory in the Rockefeller Institute for Medical Research. These methods may be applied in "five major fields of investigation, namely experimental morphology and the study of tumors, viruses, hypersensitivity and immunity." The introduction by Dr. Carrel is an excellent review of the facts pertaining to the origin, purposes, difficulties and possibilities of this method of research as one of the aids in transforming a dry, dead morphologic concept of life into one dominated by biologic and physical reactions. It is quite evident in Dr. Carrel's review that fresh tissue culture, as a method of study, is still in experimental stages, requiring refinement of technic, carefulness of controlled observation and conservatism in interpretation and clinical application. The body of the book is particularly devoted to methods and apparatus which should be of great value to those interested in repeating experiments and attempting to solve new problems involving cellular growth in all its phases. This book, although small, contains illustrations of instruments, apparatus and photomicrographs which will help greatly the beginner in his work on the culture of both normal and abnormal tissues. There are also 753 bibliographic references, beginning with the first publication of Harrison (1906-1907) to the most recent contributions of 1937.

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# *Bureau of Legal Medicine and Legislation*

## MEDICOLEGAL ABSTRACTS

**Malpractice: Right of Surgeon to Discontinue Operation on Encountering Unexpected Risk.**—The plaintiff had been afflicted since she was 3 years old "with serious trouble of the head, nose and throat, at times threatening to involve her lungs." In 1929, when she was 9, her family physician referred her to the defendant, who after diagnosing her ailment as an infected left antrum stated that it would be necessary to "make a hole in the mouth and cut away and remove the diseased tissue" and to administer five or six bronchoscopy treatments subsequently "to clear up the chest." The child's mother, however, in the hope that a change of climate might render such treatment unnecessary, postponed the operation, but no relief followed. In May 1931 the defendant was asked to operate, but because of the condition of the child's chest he did not do so until June 22, 1931. Prior to the operation the mother instructed the defendant "to act on his own best judgment" and gave written consent to the operation. After the operation had been proceeding some twenty-five minutes under an anesthetic, the physician "recognized a condition as 'quite dangerous'; in fact she had a crisis of pneumonia." He "deemed it inadvisable to continue with the operation" and made "no attempt to remove the membrane." The child remained in the hospital five days. Then she was taken home and treated by the defendant from time to time. She was given many bronchoscopy treatments until 1933. The mother then dismissed the defendant and employed other physicians. In 1937 the child, by her father as her next friend, brought suit against the defendant for failing to operate as he had contracted to do. The trial court nonsuited the case on the ground, among others, that there was no proof of a breach of the contract by the defendant. The plaintiff appealed to the supreme court of New Jersey.

Looking at the evidence, said the supreme court, there is no doubt that a radical operation on the left antrum was to be performed. That such an operation was performed by the defendant was proved without substantial dispute. The plaintiff contended, however, that the operation agreed on was not completed because the defendant, without right and illegally, refused or neglected to continue it by the removal of the diseased tissue. That contention, in the opinion of the court, was unsound. The undisputed testimony showed that the defendant, in discontinuing the operation, was within his rights and performed his duty to his patient, since he found in the course of the operation that to continue it would endanger her life. Where, as here, the duly authorized representative of an infant patient has selected a physician to perform an operation under anesthesia and has appointed no other person to represent her during the period of unconsciousness, the law will by implication constitute the physician the representative of his patient and will cast on him the responsibility of so acting in her interest that she will receive the full benefit of

his professional judgment and skill to which she is entitled. This implication, which protects the physician while acting within its scope, places no duty on him to perform an operation that involves risks or results of a kind not contemplated. As was said in *Bennan* v. *Parsonnet,* 83 N. J. L. 20, 83 A. 948:

> The question, however, is one to be settled, not by authority, but by reason, and its importance is such that it touches at a vital point the interests of the entire public, any member of which may at any time suffer in life or health by the establishment of a rule that will paralyze the judgment of the surgeon and require him to withhold his skill and wisdom at the very juncture when they are most needed, and when, could the patient have been consulted, he would manifestly have insisted upon their being exercised in his behalf.

Here, continued the supreme court, according to the undisputed proof, the physician was quoted as saying "I started to operate, and there was a condition there which I recognized as quite dangerous. She had a crisis of pneumonia . . . and I deemed it inadvisable to continue with the operation."

The plaintiff next contended that the evidence respecting the contract of the physician presented a question the jury should have determined as to the terms of the engagement. We think not, said the supreme court. There was no ambiguity in its terms, and the interpretation of such a contract is a question of law for the trial judge and should not be left to the jury.

After discontinuing the operation, the plaintiff further contended, the physician was under an obligation to continue it at some future time, both with respect to the removal of the diseased tissue and with respect to the bronchoscopic treatments to clear up the chest. But, said the court, that contention ignores the undisputed facts. The proofs show that the defendant properly continued from time to time to treat the child in both respects for a considerable period, until the child was removed from his supervision and treatment by the mother, who engaged other physicians to continue such treatment. That this action of the mother was against the wishes of the defendant was disclosed by the proof that the defendant reported to the mother, saying "I would still like to go on with the work; the work still remains; the left antrum is still infected. I will continue with the operation," and added, "Since that time the other side has been infected, that is, the right antrum." The rule is, said the court, that whenever, as here, one party to a contract prevents the other from carrying out the terms thereof, the other party may treat the contract as broken and abandon it. Such an abandonment is merely the acceptance of a situation created by the wrongdoer.

For the reasons stated, the supreme court affirmed the judgment in favor of the defendant.—*Hanig v. Orton (N. J.), 195 A. 812.*

**Partnerships: Agreement in Restraint of Professional Practice Enforceable.**—The plaintiff physicians, as partners, operated a clinic and entered into a contract of employment with the defendant physician, for the period of one year, in which the defendant agreed that he would not engage in the practice of medicine in the community for ten years from the date of the expiration of the contract without the consent of the clinic group. At the termination of an extended period of the contract, the defendant apparently commenced the private practice of medicine in the city, outside the clinic, and the plaintiffs sought to enjoin that practice. The trial court granted the desired relief and the defendant appealed to the Supreme Court of Iowa.

The privilege of a duly licensed physician, said the Supreme Court, to practice when and where he may wish is a right which the courts will zealously protect. The privilege is one, however, which by valid, voluntary contract, a physician may restrict, provided such contractural restrictions are reasonable and not contrary to public policy. In holding that the restrictions in the present case were reasonable and not contrary to public policy, the court quoted, with approval, from 6 Ruling Case Law 805, as follows:

> If the restrictions are not otherwise contrary to public policy, they must be held to be valid when they appear to be reasonably necessary for the fair protection of the employer's business or rights, and do not unreasonably restrict the rights of the employee, due regard being had to the subject-matter of the contract, and the circumstances and conditions under which it is to be performed. This rule seems to be especially applicable to agreements by assistants to professional men. Such agreements enable the employer to instruct his assistant without fear of afterwards having a rival. Few professional men would take assistants and intrust them with their business, impart to them their knowledge and skill, bring them in contact with their clients and patients, unless they were assured that the knowledge and skill imparted and the friendships and associations formed would not be used, when the services were ended, to appropriate the very business such assistants were employed to maintain and enlarge.

The defendant further contended that the original partnership that negotiated the contract with him was dissolved by operation of law by the retirement of one of the partners and that when a new partner was taken in this in effect resulted in the formation of a new partnership which was not a party to the original contract and therefore was not entitled to maintain any action for the enforcements of the restriction contained in it. Without going into the matter of whether this contention would have been sound if timely made, the court said, it is sufficient to say that the defendant was not in a position to raise it after having operated under the new partnership the full time of the written contract and the extended period thereof. No contention of this sort was then suggested by the defendant and he continued his work and accepted pay according to the understanding of the parties. It was too late for the defendant to raise it after he had terminated his services.

The Supreme Court having found no error in the decree of the trial court, its action granting the injunction was affirmed. —*Larsen v. Burroughs (Iowa), 277 N. W. 463.*

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# Society Proceedings

## COMING MEETINGS

Academy of Physical Medicine, Washington, D. C., Oct. 24-26. Dr. Herman A. Osgood, 144 Commonwealth Ave., Boston, Secretary.

American Academy of Ophthalmology and Oto-Laryngology, Washington, D. C., Oct. 9-14. Dr. William P. Wherry, 107 South 17th St., Omaha, Executive Secretary.

American Association of Obstetricians, Gynecologists and Abdominal Surgeons, White Sulphur Springs, W. Va., Sept. 22-24. Dr. James R. Bloss, 418 Eleventh St., Huntington, W. Va., Secretary.

American Association of Railway Surgeons, Chicago, Sept. 19-21. Dr. Daniel B. Moss, 547 W. Jackson Blvd., Chicago, Secretary.

American College of Surgeons, New York, Oct. 17-21. Dr. George W. Crile, 40 East Erie Street, Chicago, Chairman, Board of Regents.

American Hospital Association, Dallas, Texas., Sept. 26-30. Dr. Bert W. Caldwell, 18 East Division St., Chicago, Executive Secretary.

American Public Health Association, Kansas City, Mo., Oct. 25-28. Dr. Reginald M. Atwater, 50 West 50th St., New York, Executive Secretary.

American Roentgen Ray Society, Atlantic City, N. J., Sept. 20-23. Dr. Carleton B. Peirce, University Hospital, Ann Arbor, Mich., Secretary.

Associated Anesthetists of the United States and Canada, New York, Oct. 17-21. Dr. F. H. McMechan, 318 Hotel Westlake, Rocky River, Ohio, Secretary General.

Association of Military Surgeons of the United States, Rochester, Minn., Oct. 13-15. Dr. H. L. Gilchrist, Army Medical Museum, Washington, D. C., Secretary.

Central Association of Obstetricians and Gynecologists, Minneapolis, Oct. 6-8. Dr. William F. Mengert, University Hospitals, Iowa City, Secretary.

Central Society for Clinical Research, Chicago, Nov. 4-5. Dr. Lawrence D. Thompson, 4932 Maryland Ave., St. Louis, Secretary.

Clinical Orthopedic Society, Nashville, Tenn., and Birmingham, Ala., Oct. 7-8. Dr. H. Earle Conwell, 215 Medical Arts Bldg., Birmingham, Ala., Secretary.

Delaware, Medical Society of, Dover, Oct. 10-12. Dr. Allan V. Gilliland, Smyrna, Secretary.

Indiana State Medical Association, Indianapolis, Oct. 4-6. Mr. Thomas A. Hendricks, 23 East Ohio St., Indianapolis, Executive Secretary.

Inter-State Postgraduate Medical Association of North America, Philadelphia, Oct. 31-Nov. 4. Dr. W. B. Peck, 27 East Stephenson St., Freeport, Ill., Managing Director.

Kentucky State Medical Association, Louisville, Oct. 3-6. Dr. Arthur T. McCormack, 620 South Third St., Louisville, Secretary.

Michigan State Medical Society, Detroit, Sept. 19-22. Dr. L. Fernald Foster, 311 Center Ave., Bay City, Secretary.

Mississippi Valley Medical Society, Hannibal, Mo., Sept. 28-30. Dr. Harold Swanberg, 510 Main St., Quincy, Ill., Secretary.

Nevada State Medical Association, Reno, Sept. 23-24. Dr. Horace J. Brown, 120 N. Virginia St., Reno, Secretary.

Omaha Mid-West Clinical Society, Omaha, Oct. 24-28. Dr. J. D. McCarthy, 107 South 17th St., Omaha, Secretary.

Pacific Association of Railway Surgeons, Los Angeles, Oct. 7-8. Dr. W. T. Cummins, Southern Pacific General Hospital, San Francisco, Secretary.

Pennsylvania, Medical Society of the State of, Scranton, Oct. 3-6. Dr. Walter F. Donaldson, 500 Penn Ave., Pittsburgh, Secretary.

Southwestern Medical Association, El Paso, Texas, Nov. 3-5. Dr. Orville E. Egbert, 116 Mills St., El Paso, Texas, Secretary.

Vermont State Medical Society, Burlington, Oct. 6-7. Dr. B. F. Cook, 154 Bellevue Ave., Rutland, Secretary.

Virginia, Medical Society of, Danville, Oct. 4-6. Miss Agnes V. Edwards, 1200 East Clay St., Richmond, Secretary.

# Current Medical Literature

## AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1928 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

### American Journal of Hygiene, Baltimore

**28:** 1-148 (July) 1938

Some Biochemical Properties of Corynebacterium Diphtheriae. M. Frobisher Jr., Baltimore.—p. 1.

Types of Corynebacterium Diphtheriae in Baltimore, Md. M. Frobisher Jr., Baltimore.—p. 13.

*Association of Trichomonas Vaginalis, Vaginitis and Leukorrhea. J. Andrews, Baltimore.—p. 36.

Trichomonas Foetus in Bulls. J. Andrews and F. W. Miller, Baltimore.—p. 40.

Further Experiments on Passive Immunity of Rats to Nippostrongylus Infections. A. C. Chandler, Houston, Texas.—p. 51.

Immunology of Epidemic Influenza. T. Francis Jr., New York.—p. 63.

Glycogen Content of Flagellate of Cattle, Trichomonas Foetus. Helen M. Stewart, Baltimore.—p. 80.

Experimental Studies on Course of Trichina Infection in Guinea Pigs: I. Minimal Dose of Trichina Larvae Required to Produce Infestation of Muscles; with an Account of Potential Productiveness of the Female Trichina. H. Roth, Copenhagen, Denmark.—p. 85.

Studies on Sodium Deficiency: Effects of Sodium Deprivation on Young Puppies. O. Turpeinen, Baltimore.—p. 104.

Some Uses of the Chick Embryo for Study of Infection and Immunity. E. W. Goodpasture, Nashville, Tenn.—p. 111.

Infection of Chorio-Allantois of Chick Embryo as Diagnostic Test for Variola. G. J. Buddingh, Nashville, Tenn.—p. 130.

Quantitative Studies on Glucose Consumption by Trichomonas Foetus. J. Andrews and T. von Brand, Baltimore.—p. 138.

**Trichomonas Vaginalis, Vaginitis and Leukorrhea.**—Andrews made clinical and parasitologic observations on 239 antepartum patients to determine the incidence of Trichomonas vaginalis and local inflammatory symptoms in the vagina. Organisms were more prevalent in Negro women (50 per cent) than in white women (18 per cent) but the incidence of symptoms was virtually the same in the two groups. The coincidence of Trichomonas vaginalis and the symptoms (considered separately, collectively or in combination) was no greater than might be expected by chance alone in the group studied. Of all the assortments, the observed coincidence of trichomonads and vaginitis was least likely to be reproduced by chance alone. Further study involving enough cases to permit the separate consideration of the different types of vaginitis in both pregnant and nonpregnant women is necessary to secure statistical evidence on the existence of a significant relationship between the presence of trichomonads and the occurrence of vaginal symptomatology.

### American Journal of Pathology, Boston

**14:** 385-514 (July) 1938

Implantation Carcinoma of Tubal Mucosa Secondary to Carcinoma of Ovary. J. A. Sampson, Albany, N. Y.—p. 385.

Behavior of Murine and Human Leprosy in Foreign Hosts. A. W. Sellards and H. Pinkerton, Boston.—p. 421.

Histologic and Cytologic Studies of Murine Leprosy. H. Pinkerton and A. W. Sellards, Boston.—p. 435.

Morphologic Variations of Tumor Cells. O. Saphir, Chicago.—p. 443.

The Matrix of Epithelial Cell Inclusion Body of Trachoma. P. Thygeson, New York.—p. 455.

The Ability of Lymph to Maintain Viability in "Devascularized" Lymph Nodes. R. L. Holman, Chapel Hill, N. C., and E. B. Self, New York.—p. 463.

*Residual Infectivity of Primary Complex of Tuberculosis. W. H. Feldman and A. H. Baggenstoss, Rochester, Minn.—p. 473.

Staining of Acid-Fast Bacilli in Paraffin Sections. G. L. Fite, Honolulu, Hawaii.—p. 491.

Exstrophy of Bladder with Imperforate Anus, Absence of Greater Part of Small and Large Intestines, Continuity of Duodenum with Colon, Absence of Left Testis, Epididymis and Cord, and Enormous Hydro-Ureter. J. McFarland, Philadelphia.—p. 509.

**Residual Infectivity of Primary Complex of Tuberculosis.**—Feldman and Baggenstoss utilized the material from sixty-eight human beings who had died by causes other than tuberculosis in an effort to determine the presence of virulent tubercle bacilli in chronic tuberculous lesions of the lungs and contiguous lymph nodes. The lesions were emulsified and material from the respective subjects was used to inoculate culture mediums and to inject guinea pigs. Tissues from the lesions of the majority of the subjects were studied microscopically and evidence of activity was apparent in a considerable number. The results of the study show that: 1. The lesions of the primary complex of tuberculosis, when definitely encapsulated and sclerotic or caseous or caseocalcerous, seldom contained viable or virulent organisms. 2. The presence or absence of viable or virulent organisms of Mycobacterium tuberculosis in the lesions of the primary complex of tuberculosis cannot be established by morphologic appearances alone. 3. The data suggest that in adults endogenous reinfection is unlikely to occur from lesions of the primary complex. 4. The presence of silica in varying amounts is a fairly constant finding in lesions of the primary complex of tuberculosis. In the absence of demonstrable viable tubercle bacilli in the lesions it is suggested that histologic signs of activity are possibly due to silica.

### Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

**40:** 1-164 (July) 1938

Peritendinitis Calcarea: Common Disease of Middle Life: Its Diagnosis, Pathology and Treatment. C. Sandström, Stockholm, Sweden.—p. 1.

*Nonputrid Pulmonary Suppuration. M. L. Sussman, New York.—p. 22.

Roentgenologic Diagnosis of Placenta Praevia: Indirect Placentography. W. H. Ude, J. A. Urner and O. F. Robbins, Minneapolis.—p. 37.

Klippel-Feil Syndrome with Unusual Clinical Manifestations. E. L. Turner, H. S. Shoulders and L. D. Scott, Nashville, Tenn.—p. 43.

*Carcinoma of Uterine Cervix: Survey of Treatment and Results in 1,491 Cases. H. H. Bowing and R. E. Fricke, Rochester, Minn.—p. 47.

Clinical Observations in Use of Supervoltage Roentgen Rays Based on Six Years' Experience. A. Soiland, Los Angeles.—p. 52.

Multiple Giant Calculi of the Prostate Gland: Report of Case. A. A. Creecy and H. Silberman, Kecoughtan, Va.—p. 63.

Large Intrathoracic Thyroid: Case Report. R. B. Miller, Hollywood, Calif.—p. 66.

Measurement of Gamma Rays. W. Friedrich, Berlin, Germany.—p. 69.

Ionization Measurement of Gamma Radiation. G. W. C. Kaye and W. Binks, Teddington, Middlesex, England.—p. 80.

Some Problems of Gamma-Ray Measurement in Radiology. G. C. Laurence, Ottawa, Ont.—p. 92.

Measurements of Radiation Energy and True Tissue Dosage (Energy Absorption) in High Voltage Therapy. L. Rovner, Chicago.—p. 104.

Factors Influencing Quantitative Measurement of Roentgen-Ray Absorption of Tooth Slabs: IX. Tube-Machine Combination Factors. H. C. Hodge, G. Van Huysen and S. L. Warren, Rochester, N. Y.—p. 108.

**Nonputrid Pulmonary Suppuration.**—Sussman reviews the roentgenologic features of the more severe forms of suppurative bronchopneumonia by means of illustrative cases. The report is intended to supplement that of Jaches made to the second international congress of radiology in Stockholm in 1928. Suppurative bronchopneumonia is to be differentiated from gangrenous bronchopneumonia, which is caused by putrefactive anaerobic organisms and which in its localized form represents the early stage of gangrenous putrid lung abscess and in its diffuse form is usually the result of a spread from a similar lesion. Suppurative bronchopneumonia may be caused by a variety of aerobic organisms including certain strains of pneumococci, streptococci, staphylococci and the Friedländer bacillus. The disease may possibly also be caused by certain anaerobic diphtheroids and streptococci. It occurs most often as a complication of purulent sinusitis, whooping cough, measles, influenza and grip, and after the aspiration of foreign bodies and secretions as in postoperative pneumonia. Suppurative bronchopneumonia is also the usual result of infection distal to any bronchial obstruction.

**Carcinoma of Uterine Cervix.**—Bowing and Fricke feel that the intensive broken-dose method of radium therapy, followed by a course of roentgen treatment, after thorough study and planning of each individual case, offers the best results in the treatment of carcinoma of the uterine cervix. In their series of 1,491 cases, extending over a period of fifteen years, although the great majority of patients (91 per cent) were in an advanced stage of the disease 26.8 per cent lived five or more years in apparently good health following treatment. The possibilities of this form of treatment for early and borderline lesions can be appreciated when it is noted that 69.2 per cent of the seventeen patients with lesions in stage 1 were well at the end of five

years, and 60.2 per cent of those (eighty-five) with borderline lesions were well at the end of five years. This form of treatment requires considerable individual care and cooperation between patient and physician. The fact that there is little risk to the treatment is attested by the fact that the hospital death rate for the entire series was only 1 per cent, the mortality occurring in the group with advanced lesions. There were no deaths during treatment in the early or borderline groups.

## American Journal of Surgery, New York

**41:** 187-368 (Aug.) 1938

Tourniquet and Local Asphyxia. F. M. Allen, New York.—p. 192.
Pathology and Therapy of the "Shoulder Joint Complex." E. Bettmann, New York.—p. 201.
Syphilis Complicating Pregnancy. W. T. Daily, Brooklyn.—p. 213.
Pelvic Tuberculosis: Review of Thirty-Six Cases. M. Glass and J. Cresci, Brooklyn.—p. 216.
Experiences in Treatment of Certain Urinary Tract Malignancies with Supervoltage Roentgen Therapy. A. D. Munger, Lincoln, Neb.—p. 220.
Thrombophlebitis of the Penis and Scrotum. M. R. Keen, Huntington, N. Y., and S. Shlimbaum, Bay Shore, N. Y.—p. 228.
*Value of Blood Diastase in Diagnosis of Common Duct Stone. C. D. Branch, Peoria, Ill., and R. Zollinger, Boston.—p. 233.
Noncalculous Chronic Gallbladder Disease. M. J. Brown, Sayre, Pa.—p. 238.
Drainage in Treatment of Perforated Appendicitis. F. G. Connell, Oshkosh, Wis.—p. 255.
Goiter in Surgical Practice. F. Glenn, New York.—p. 259.
*Comparative Study of Some Antiseptics and Germicides, with Special Reference to Alkyl-Dimethyl-Benzyl Ammonium Chlorides. C. G. Dunn, Cambridge, Mass.—p. 268.
Head Injuries: Treatise from the Point of View of Diagnosis, Prognosis and Treatment. J. H. Watt, Little Neck, Long Island, N. Y.—p. 272.
Neurogenic Sarcoma. H. Charache, Brooklyn.—p. 275.

**Blood Diastase in Diagnosis of Common Duct Stone.**—Branch and Zollinger performed the blood diastase index in seventy-five cases of cholelithiasis in order to determine its value as an aid in the diagnosis of stone of the common duct. Twelve stones of the common duct were recovered at the time of operation. The elevation of the index was found of value provided the samples were obtained during or immediately after an attack of biliary colic as the result of a calculus in the common duct. In six of these twelve cases of stone of the common duct there was a definite rise in the blood diastase index, varying in amount from 300 to more than 1,000 mg. per hundred cubic centimeters. These patients were seen immediately after the onset of the attack. In the other six instances, however, a period of four days or more had elapsed and at that time the index was found to be within normal range. In the cases of cholelithiasis alone the index was found to be slightly elevated in ten cases. With one exception, this rise in the diastase was below 250 mg. However, in one case of cholelithiasis associated with acute cholecystitis there was an elevation of blood diastase to 600 mg. Whether a stone was present in this case but was not found at operation cannot be determined.

**Comparison of Antiseptics and Germicides.**—Dunn compared a few well known agents in respect to their germicidal action toward Staphylococcus aureus, Government 209, Escherichia coli and Bacillus subtilis. The antiseptics used were purchased in the open market except for the alkyl-dimethyl-benzyl ammonium chlorides, which were obtained through the courtesy of a pharmaceutical company. As a germicide, alkyl-dimethyl-benzyl ammonium chloride was considerably more effective toward Staphylococcus aureus at both 20 and 37 C. than the marketed products (tincture metaphen [1:200], tincture merthiolate [1:1,000], hexylresorcinol and pepsodent). In the presence of 50 per cent blood serum, the ammonium compound showed greater efficacy at 20 C. toward Staphylococcus aureus than any of the agents with which it was compared (bacili kil, hexylresorcinol, metaphen, merthiolate, pepsodent and zonite). At 37 C. and under similar conditions, the ammonium compound, bacili kil, metaphen and merthiolate were most effective. Tincture metaphen (1:200), alkyl-dimethyl-benzyl ammonium chlorides and pepsodent were most efficacious toward Escherichia coli at 20 and 37 C. Metaphen was less active than the ammonium compound at 20 C. but was more active than this compound at 37 C. Spores of Bacillus subtilis were not destroyed as rapidly or in as high dilution as vegetative cells of bacteria. Metaphen (1:200) and the ammonium compound (a 1:10 alkaline solution) were most active in destroying the spores. Phenol (1:20) and pepsodent did not destroy the spores in twenty-five hours.

## Annals of Internal Medicine, Lancaster, Pa.

**12:** 1-146 (July) 1938

Some Experimental Observations Pertinent to Treatment of Hepatic Disease. J. L. Bollman, Rochester, Minn.—p. 1.
Climate, Mode of Life and Heart Disease. P. D. White, Boston.—p. 6.
*Hyperparathyroidism Simulating or Associated with Paget's Disease, with Three Illustrative Cases. A. B. Gutman and W. B. Parsons, New York.—p. 13.
The Oxygen Therapy of Pneumonia (Five Years' Experience at the U. S. Marine Hospital, Norfolk, Va.). G. H. Faget and W. B. Martin, Norfolk, Va.—p. 32.
Secondary Amyloidosis: Results of Therapy with Desiccated Whole Liver Powder. H. G. Grayzel and M. Jacobi, Brooklyn.—p. 39.
Relationship of Age to Concentration of Acid Soluble Phosphorus in Human Tissues. L. Pincussen, C. I. Reed and M. B. Visscher, Chicago.—p. 59.
Infarction of the Heart: III. Clinical Course and Morphologic Findings. W. B. Bean, Boston.—p. 71.
Present Status of Methods for Prophylaxis of Acute Anterior Poliomyelitis. J. A. Kolmer, Philadelphia.—p. 95.
Study of Changes in Serum Cholesterol, Gastric Secretion and Carbohydrate Metabolism in Patients with Toxic Goiter. J. S. McElroy, Edith B. Schuman and J. O. Ritchey, Indianapolis.—p. 106.
Trends in Public Health. T. Parran, Washington, D. C.—p. 115.

**Hyperparathyroidism and Paget's Disease.**—Gutman and Parsons made clinical, roentgenologic and biochemical studies on three patients with proved hyperparathyroidism presenting, in addition, certain aspects of Paget's disease (in one the sclerotic changes were in the skull, in one in the pelvis and in the other in the tibia and the skull). The coexistence of the two diseases in these instances would appear to be fortuitous. An alternative explanation has been offered by Albright, Aub and Bauer: If the unknown factor stimulating osteoclastic activity in Paget's disease is present in a patient in subthreshold degree, superimposed hyperparathyroidism, with its generalized stimulus to osteoclastic activity, may make the underlying disease become manifest. Whatever the explanation for these cases, the authors feel justified in concluding that they do not seriously jeopardize the prevailing view that hyperparathyroidism and Paget's disease are distinct and unrelated entities. They serve, however, to emphasize two practical points: 1. Cases of hyperparathyroidism may present isolated areas of bone sclerosis. 2. Appropriate chemical studies should be made even in cases of apparently obvious Paget's disease to exclude the possibility of hyperparathyroidism.

## Annals of Surgery, Philadelphia

**108:** 161-320 (Aug.) 1938

*Use of Heparin in Thrombosis. G. D. W. Murray and C. H. Best, Toronto.—p. 163.
*Study of Experimental and Clinical Shock, with Special Reference to Its Treatment by Intravenous Injection of Preserved Plasma. E. B. Mahoney, Cincinnati.—p. 178.
Operative Treatment of Communicating Hydrocephalus. W. E. Dandy, Baltimore.—p. 194.
*Primary Malignancy of Jejunum and Ileum. A. L. Cameron, Minot, N. D.—p. 203.
Surgical Aspects of Lesions of Meckel's Diverticulum. N. A. Womack and R. B. Siegert, St. Louis.—p. 221.
Traumatic Rupture of Bile Ducts. K. M. Lewis, New York.—p. 237.
Clinical Significance of Pancreatic Reflux. R. Colp and H. Doubilet, New York.—p. 243.
Studies on Renal Hypertension: Effect of Deviating Urine into Blood Stream and Intestines of Dogs. W. A. Geer and L. R. Dragstedt, Chicago.—p. 263.
Primary Carcinoma of Ureter. C. C. Higgins, Cleveland.—p. 271.
Fate of Tendon, Fascia and Elastic Connective Tissue Transplanted into Bone. G. Kernwein, J. Fahey and M. Garrison, Chicago.—p. 285.
Evaluation of Excision in Treatment of Ununited Fracture of Carpal Scaphoid (Navicular) Bone. A. J. Davidson and M. T. Horwitz, Philadelphia.—p. 291.
Osseous System in Hodgkin's Disease. H. S. Abrams, Tuscaloosa, Ala.—p. 296.
Sublingual Epidermoid Cysts. B. R. Shore, New York.—p. 305.
Regeneration of Sensation in Transplanted Skin. H. R. McCarroll, St. Louis.—p. 309.

**Heparin in Thrombosis.**—After studying the effect of heparin in dogs in arterial anastomosis, venous grafts, peripheral embolism, splenectomy and transplantation of organs, Murray and Best administered heparin to 335 human beings in peripheral embolism, splenectomy, postoperative pulmonary embolism, pulmonary embolism with infarcts and phlebitis. Heparin is

not administered for from four to twenty-four hours after operations in order that the normal processes which control bleeding may begin to function. If there is any doubt about oozing or bleeding, the patient is not given heparin. There were only four cases of postoperative hematomas while under the influence of heparin. The hemorrhage stopped when heparin was discontinued and all the patients recovered. As there are no toxic effects, the patients in the wards have received general heparinization. The ordinary intravenous drip is used, and to the saline solution sufficient heparin is added to increase the clotting time of the patient to about fifteen minutes. Usually, heparin is added in the proportion of ten units of heparin to 1 cc. of saline solution. The injection is discontinued when the patient has regained normal activity, i. e., when the factors thought to contribute to the production of thrombosis have ceased to act. This is when shock has passed and the blood pressure and circulation are normal; the incision has healed and is not painful, so that deep respirations are possible; the patient feels well and energetic and moves about actively in bed and can do exercises; distention is gone; the appetite has returned and the gastrointestinal and urinary functions have returned to normal; the chest is clear, and the temperature and pulse are normal. A patient in whom active thrombosis is detected following an operation, during an illness or who has had a pulmonary embolism is probably in grave danger and would probably benefit from the administration of heparin. Until the methods of detecting those cases in which thrombosis is likely to develop are perfected, the group of postoperative cases in which this complication is likely to develop should be treated. The clinical use of heparin in phlebitis, embolism and operations on blood vessels are limited, but experimental evidence, especially in operations on blood vessels, gives strong support in favor of its value. In the suturing of vessels, the repair of aneurysms and arteriovenous fistulas, heparin may be of great assistance in obtaining good results. In blood transfusion heparin can be employed quite satisfactorily instead of citrate. It is useful also in removing blood for the ordinary laboratory tests where citrate or oxalate is commonly used. Other possible fields in which heparin might be useful, but which have not been explored, are coronary thrombosis and cerebrovascular thrombosis.

**Plasma in the Treatment of Shock.**—During the past year, in order to test the effectiveness of dried plasma in experimental shock with and without hemorrhage and to compare the dried plasma with the other commonly used intravenous fluids, Mahoney produced shock in dogs by cooling the peritoneal surfaces and by trauma to an extremity. The ultimate result of injecting dissolved, processed plasma in shock produced by peritoneal cooling was the same as with the injection of whole blood, but the elevation in blood pressure was more prompt and the improvement in the general condition of the dog was more striking. The blood pressure returned to normal within half an hour after the injection of the plasma and remained stabilized. The dogs regained consciousness, the body temperature returned to normal and the mucous membranes regained their normal color within one hour. In shock produced by trauma to an extremity the response of the blood pressure to plasma was only temporary. In one experiment the dog survived, but with all others the blood pressure increased temporarily and then steadily declined until death occurred. The dissolved, processed plasma has been utilized in treating patients who were in profound shock resulting from burns and from trauma. The number of cases is limited, but the results have been decidedly encouraging, especially with burns. The clinical study will be the subject of a future publication. The dissolved plasma should always be cross matched with the recipient's cells, preferably by the Coca compatibility test for direct matching.

**Primary Malignancy of Jejunum and Ileum.**—The four cases of primary malignant growth of the jejuno-ileum that Cameron encountered during the last eight years are cited and the reports of 196 similar cases in the literature during the same period are reviewed. Carcinomas outnumbered sarcomas 5:4, and malignant carcinoids 8:1. The average age incidence for these three groups is respectively 51, 48 and 57 years, exclusive of infants and children, who comprise 10 per cent of the sarcoma group and who are almost exclusively males. Two thirds of the primary neoplasms appear in the extremities and one third in the intervening portions of the jejuno-ileal segment. From 80 to 90 per cent of carcinomas and malignant carcinoids and at least 50 per cent of sarcomas produce mechanical obstruction of the intestine. Infrequently there are neither localizing symptoms nor positive x-ray signs of localized intestinal involvement. Nonobstructive cases present almost insurmountable diagnostic difficulties. Occult blood in the stool is inconstant and frequently of no material value in differential diagnosis. Positive x-ray signs of localized intestinal involvement are essential for a diagnosis of a small intestinal neoplasm. A clinical diagnosis of jejuno-ileal neoplasm is made correctly in approximately one sixth of the cases. A positive clinical and x-ray diagnosis of malignant growth is seldom made and rarely warranted by the conditions found. Approximately two thirds of the cases are operable. The operative mortality is 30 per cent and five year survivals occur in less than 10 per cent.

## Archives of Dermatology and Syphilology, Chicago

**38:** 163-328 (Aug.) 1938

LXXX. Blastomycosis, Coccidioidal Granuloma and Paracoccidioidal Granuloma: Comparative Study of North American, South American and European Organisms and Clinical Types. M. Moore, St. Louis.—p. 163.
Bowen's Disease with Metastases (Epithelioma of Bowen). E. Kuznitzky, in collaboration with H. Jacoby, Breslau, Germany.—p. 191.
*Arsenical Dermatitis Produced in Treatment of Trichomonas Vaginitis: Report of Five Cases. Beatrice M. Kesten, New York.—p. 198.
Leukoderma Acquisitum Centrifugum in Association with Lichen Planus. S. S. Robinson, Los Angeles.—p. 200.
*Incidence of Diseases of Skin in Feebleminded Persons. T. Butterworth, Reading, Pa., and M. Wilson Jr., Spring City, Pa.—p. 203.
Scleredema Adultorum (Buschke). H. L. Arnold Jr., Ann Arbor, Mich.—p. 210.
*Clinical Application of Stain for Spirochetes (Krajian). S. O. Chambers and J. R. Scholtz, Los Angeles.—p. 217.
Citrus Fruit Dermatoses. H. Beerman, Philadelphia; G. H. Fondé, New York, and J. L. Callaway, Durham, N. C.—p. 225.
Subsurface Mycelium and Dyes: Their Significance in Mycologic Studies. J. W. Williams, Cambridge, Mass.—p. 235.
Squamous Cell Epithelioma in Psoriatic Patches. H. Charache, Brooklyn.—p. 241.
Granuloma Inguinale: Report of Case of Involvement of Upper Lip and Depigmentation and Edema of Vulva. T. B. Hall, Kansas City, Mo.—p. 245.

**Arsenical Dermatitis.**—Acetarsone and related compounds containing pentavalent arsenic are used with increasing frequency in the treatment of infections caused by Trichomonas vaginalis. Kesten cites four cases in which localized dermatitis followed the use of one of these compounds and in which the course, the appearance and the distribution of the eruption were strikingly similar. In a fifth case the dermatitis produced was generalized and indistinguishable from that produced by the arsphenamines. These cases are examples of sensitization to a pentavalent arsenical following absorption through the vaginal mucous membrane.

**Cutaneous Diseases in Feebleminded.**—Butterworth and Wilson examined the skin of the entire population (1,895 patients) of the Pennhurst State School for the Feebleminded. There were 780 dermatologic diagnoses made in 654 cases. The incidence of cutaneous diseases and abnormalities was about equal in the two sexes. A total of sixty-eight different dermatologic conditions was observed. Of the total number of diagnoses, 546 were in order of frequency acne vulgaris, nevi, tinea, pyoderma, distended stria, traumatic dermatitis, verrucae, hypertrichosis, perlèche and contagious molluscum. There were fifteen cases of seborrhea and fourteen cases of scabies.

**Stain for Spirochetes.**—For the last five years in the department of syphilis of the Los Angeles County Hospital Chambers and Scholtz have made clinical use of a staining method (a modification of Dieterle's method developed by Krajian) for the identification of Spirochaeta pallida in lesions suspected of being syphilitic. They have used it in nearly 500 cases, the material including tissue from subjects with all types of cutaneous and visceral syphilis, as well as necropsy material. The present communication deals only with its use in cases of primary syphilis. The procedure is essentially the removal of a piece of tissue measuring 2 by 5 mm. from the suspected lesion, placing it in a 10 per cent solution of formaldehyde and sending it to a laboratory for staining. The staining procedure requires less than an hour. The tissue is sectioned by

the rapid freezing technic. The stain has been found accurate in identifying Spirochaeta pallida in cases of suspected primary syphilis. Its use in the public health campaign against syphilis is suggested. The stain has been found helpful in many other cases besides those involving suspected primary lesions. It has shown spirochetes in secondary eruptions, in a small number of late cutaneous syphilids, in necropsy material and in surgical specimens.

## Archives of Internal Medicine, Chicago

**62:** 1-180 (July) 1938

Pathogenesis of Bundle Branch Block: Review of Literature; Report of Sixteen Cases with Necropsy and of Six Cases with Detailed Histologic Study of Conduction System. W. M. Yater, Washington, D. C.—p. 1.

Unusual Reactions of Patients with Hypertension to Glyceryl Trinitrate. H. C. Lueth and T. G. Hanks, Chicago.—p. 97.

*Acute and Chronic Mediastinitis: Study of Sixty Cases. C. S. Keefer, Boston.—p. 109.

*Influence of Diarrhea on Vitamin $B_1$ Requirement. Margaret Dann and G. R. Cowgill, New Haven, Conn.—p. 137.

Change in Plasma Volume During Recovery from Congestive Heart Failure. W. B. Wood and C. A. Janeway, Baltimore.—p. 151.

Recent Advances in Knowledge of Anterior Lobe of Hypophysis. E. H. Rynearson and C. H. Hodgson, Rochester, Minn.—p. 160.

**Acute and Chronic Mediastinitis.**—Keefer reports cases which show that an acute abscess or a chronic inflammatory lesion of the mediastinum may occur as a result of a variety of infections. In some cases the process is only part of a more widespread and extensive process, and for that reason it is of interest only so far as the complete diagnosis is concerned. In other cases, however, an abscess is the principal lesion and when recognized it can be treated with a reasonable degree of success. Acute and chronic mediastinal infections are most common in the posterior mediastinum. The common causes of posterior mediastinitis are perforation of the esophagus and suppurative lymph nodes. Abscess of the anterior mediastinum results most often from an infection in the neck or from osteomyelitis of the sternum. The diagnosis of mediastinal abscess depends on (1) the presence of a condition which is capable of producing mediastinal infection, (2) the symptoms and signs of an infection, with local physical signs referable to the mediastinum, and (3) the results of aspiration or exploration. The prognosis is poor, but when the process is localized to a part of the mediastinum that is accessible for surgical intervention the prognosis is better. Chronic fibrous mediastinitis is due to healed or active tuberculosis, syphilis or pyogenic infection. There is often an associated fibrous pericarditis, so that the clinical picture may be that of congestive heart failure due to cardiac compression. Cardiac failure with congestion may also accompany mediastinitis when there is an associated defect of the mitral valve or an aneurysm of the aorta compressing the pulmonary artery. When this is the case the mediastinitis may be latent or may play only a small part in the clinical features.

**Diarrhea and Vitamin $B_1$ Requirement.**—Dann and Cowgill carried out experiments on dogs in order to obtain data applicable to an estimation of the vitamin $B_1$ requirement of patients suffering from diarrhea and on the mode of excretion of this vitamin. They find that diarrhea following adequate storage of vitamin $B_1$ has little effect on the time required for depletion to the level of anorexia. It seems evident that when the animals are not receiving vitamin $B_1$ by mouth and the question of failure of absorption due to diarrhea is not involved, the rate of loss of stored vitamin $B_1$ from the body is not accelerated by diarrhea. In marked contrast were the results when tissue stores were lowered and daily oral doses of vitamin $B_1$ were administered. When mild diarrhea was induced under these conditions, without exception there was a definite increase in the amount of the vitamin required. This increase ranged from 18 to 82 per cent. The increase can be accounted for by the failure of absorption of the food materials containing vitamin $B_1$. The concomitant loss of part of the caloric value of the ingested food did not prevent the failure of appetite which is characteristic of vitamin $B_1$ deficiency. The consistent increase in requirement seen with the daily oral doses was absent when the daily dose of vitamin $B_1$ was given parenterally. With the exception of one dog, which showed a marked increase, the amounts of rice polishings concentrate needed to maintain appetite when the dogs were subjected to diarrhea were not significantly larger than those needed in the absence of diarrhea. The average value for the requirement of the vitamin given parenterally was 25 milliequivalents per kilogram daily without diarrhea and 25.5 milliequivalents with diarrhea. The apparently lower requirement of vitamin $B_1$ by this route as compared to that administered orally is of little significance in view of the wide range of individual variation. The results indicate that no significant amounts of vitamin $B_1$ are lost by excretion into the intestinal tract when its activity is stimulated and fluid loss is encouraged by diarrhea induced with magnesium sulfate. The possibility of excretion in the bile is by no means excluded. However, if these results are considered in conjunction with those obtained in 1930 (Cowgill, Rosenberg and Rogoff) it appears probable that the chief route of excretion of vitamin $B_1$ is by way of the kidney. Clinical observations by a number of authors are cited, revealing that avitaminosis, especially of the B complex, is a not infrequent complication of chronic diseases of the gastrointestinal tract in which diarrhea is a symptom. Chronic ulcerative colitis is a conspicuous example of such conditions. A normal person weighing 66 Kg. (145 pounds) should ingest a diet having a vitamin-calory ratio of at least 1.87. The minimal ratio for an adult weighing 35 Kg. (77 pounds) is 1 and for one of 80 Kg. (176 pounds), 2.25. It is advised that, after the minimal vitamin-calory ratio required by the patient has been ascertained and the ratio provided by the diet he is receiving has been calculated, his vitamin $B_1$ intake should be increased by means of some supplement, so that if the diarrhea is mild he receives a vitamin-calory ratio of at least double the calculated minimum; if the diarrhea is moderately severe the vitamin-calory ratio should be three times the minimum. For the majority of patients showing diarrhea it is preferable to give the extra vitamin in the form of foods rich in vitamin $B_1$, such as brewers' yeast and wheat germ.

## Archives of Pathology, Chicago

**26:** 449-602 (Aug.) 1938

Cholecystitis and Hypertrophy of Muscularis of Gallbladder. K. B. Lawrence and S. Warren, Boston.—p. 449.

Experimental Hypercholesteremia in Dogs. W. C. Corwin, Rochester, Minn.—p. 456.

Destruction of Ganglion Cell in the Infant Brain. C. R. Tuthill, Staten Island, N. Y.—p. 463.

Tooth Ring Analysis: IV. Neonatal Dental Hypoplasia: Analysis of Teeth of an Infant with Injury of the Brain at Birth. I. Schour and R. Kronfeld, Chicago.—p. 471.

Comparison of Cutaneous Lesions Produced in Rabbits by Intracutaneous Inoculation of Spirochetes from Yaws and Syphilis. H. W. Ferris and T. B. Turner, New York.—p. 491.

New and Simple Method for Detection of Blood by Heating. A. M. Moody, San Francisco; F. Proescher, San Jose, Calif., and J. L. Carr, San Francisco.—p. 501.

Pathologic Anatomy of Hypophysis and Adrenals in Anencephaly. D. M. Angevine, New York.—p. 507.

Subdural Hematoma. A. B. Baker, Minneapolis.—p. 535.

## Canadian Medical Association Journal, Montreal

**39:** 1-104 (July) 1938

Acute Anterior Poliomyelitis: Review of Sixty-Six Adult Cases Which Occurred in the 1937 Ontario Epidemic. H. H. Hyland, W. J. Gardiner, F. C. Heal, W. A. Oille and O. M. Solandt, Toronto.—p. 1.

Experimental Studies with Sulfanilamide and Other Compounds. P. H. Greey, Toronto.—p. 12.

Use of Sulfanilamide in Clinical Medicine. W. H. Brown, Toronto.—p. 15.

Sulfanilamide as Urinary Antiseptic: Preliminary Report. D. R. Mitchell, Toronto.—p. 22.

Silicosis: Experimental Study of Leaching of Silicates in Tissues. Helen E. Williams and D. A. Irwin, Toronto.—p. 26.

Hypoglycemic Substance from Roots of the Devil's Club (Fatsia Horrida). R. G. Large and H. N. Brocklesby, Prince Rupert, B. C.—p. 32.

Present Day Problems in the Management of Diabetes. F. N. Allan, Boston.—p. 36.

Allergy in Childhood. H. L. Bacal, Montreal.—p. 41.

Modern Trends in Child Psychiatry. C. H. Gundry, Brockville, Ont.—p. 46.

Some Observations on Petrous Tip Suppuration: Report of Three Cases. D. E. S. Wishart, Toronto.—p. 50.

Bilateral Spontaneous Pneumothorax: Two Cases. D. B. Westcott, Mount Forest, Ont.—p. 57.

Papillary Squamous Cell Epithelioma of Renal Pelvis. A. Strasberg, Montreal.—p. 58.

## Canadian Public Health Journal, Toronto

**29:** 321-372 (July) 1938

Public Health Progress: Presidential Address. P. S. Campbell, Halifax, N. S.—p. 321.
*Outbreak of Staphylococcic Food Poisoning. J. Roberts, W. J. Deadman and F. J. Elliot, Hamilton, Ont.—p. 325.
*Staphylococcic Food Poisoning in Billings, Mont. W. F. Cogswell, B. K. Kilbourne and Edith Kuhns, Helena, Mont.—p. 333.
Some Factors Concerning Care of the Newborn. A. Brown, Toronto.—p. 337.
Objectives of Industrial Hygiene. F. M. R. Bulmer, Toronto.—p. 345.

**Staphylococcic Food Poisoning.**—Roberts and his associates state that from March 9 to 15, 1938, twenty-one persons (five families) were reported as being ill. Investigation supported the incrimination of custard-filled pastry, as the only members unaffected were those who had not eaten the pastry. The interval of time elapsing between the meal and the symptoms varied from one and one-half to four hours. Those who became ill suffered abdominal pain, vomiting and diarrhea. All employees of the incriminated bakery were carefully examined and bacteriologic tests were made. Laboratory studies of the cream-filled pastry showed the presence of Staphylococcus aureus. This organism was isolated also from the gastric contents of members of one of the five families while in the hospital, and from the feces. The same organism was isolated from jam pails, pastry bags and milk taken from a can at the bakery.

**Staphylococcic Food Poisoning in Montana.**—According to Cogswell and his co-workers, on May 26, 1936, information was received by the state board of health of the occurrence of an outbreak of food poisoning in Billings, Mont. The investigation showed that various forms of custard-filled and cream-filled cakes were used by almost all of those who suffered illness. Several cases of illness occurred also in Laurel. Study showed that cases of illness had occurred as early as May 16, both in Billings and in Laurel. The major outbreak, however, occurred during the period May 23 to 26. More than fifty cases were investigated and probably a number of other cases occurred with milder symptoms. The patients suffered an acute illness developing within four or five hours after the infected food was eaten. The majority suffered marked abdominal pain followed by vomiting and frequent bowel movements, in some cases as many as twenty. Examination of the pastry showed the presence of staphylococci in large numbers in the fillings. Reactions typical of Staphylococcus albus were obtained. In gelatin stabs a slight cuplike liquefaction occurred. Staphylococcus aureus as well as Staphylococcus albus strains were recovered from orange rolls. It is evident that both Staphylococcus albus and aureus were associated in the poisoning. The investigation did not reveal the source of the contamination. On the discontinuance of the distribution of cakes with such fillings, no further cases occurred.

## Connecticut State Medical Society Journal, Hartford

**2:** 357-422 (Aug.) 1938

Problems for Resuscitation. H. S. Ruth, Philadelphia.—p. 358.
Syphilis in Pregnancy. J. R. Miller, Hartford.—p. 363.

## Indiana State Medical Assn. Journal, Indianapolis

**31:** 379-432 (Aug.) 1938

*Industrial Dermatoses. L. Schwartz, New York.—p. 379.
The Problem of Industrial Dermatoses. F. W. Cregor and N. M. Beatty, Indianapolis.—p. 389.
The Pathology of Industrial Pulmonary Hazards. B. W. Rhamy, Fort Wayne.—p. 389.
Silicosis, an Occupational Disease. C. A. Stayton, Indianapolis.—p. 393.
Intracapsular Femoral Fracture: Selection of Type of Treatment. E. B. Mumford, Indianapolis.—p. 398.
Evipal Soluble Anesthesia in Bronchoscopic Treatment of Bronchiectasis. P. D. Crimm and D. M. Short, Evansville.—p. 405.
Basketball. I. D. White and E. C. Boyd, Clinton.—p. 407.
Leukorrhea and Office Practice of Gynecology. L. A. Gray, Louisville, Ky.—p. 409.

**Industrial Dermatoses.**—Schwartz points out that it is estimated that industrial dermatitis constitutes more than 65 per cent of all cases of occupational disease reported in the United States and from available records it is estimated that there are about 20,000 patients in the United States with industrial dermatitis of sufficient severity to lose time from work. Actually there are many times this number, because a large majority of cases of industrial dermatitis are not reported even though they may be treated by the plant physician or by the insurance company doctors. The chief active causes of industrial dermatitis differ in various localities according to the prevailing type of industry. In rural communities plant poisonings are prevalent, whereas in large manufacturing communities the chemical irritants are the chief causes. The actual causes of industrial dermatoses are mechanical and physical trauma, chemical irritants, specific irritants, plants and biologic agents. Some of these various causative factors act as keratin and fat solvents, desiccating or hygroscopic agents, protein precipitants, oxidizers, hydrolizers, stimulators to the keratin-forming cells of the skin or sensitizers. There is no one factor on which a diagnosis of industrial dermatitis can be made. In most instances the appearance of the lesions gives no clue to the irritant. Especially is this the case in the acute and chronic eczematoid types of occupational dermatoses. In applying medication to the lesions, only the mildest form of ointments or lotions should be used. Strong ointments are apt to irritate the skin and cause more dermatitis. Desensitization has not given any encouraging results. The ideal prevention is to safeguard the operation so that injurious chemicals do not come in contact with the skin.

## Journal of Bacteriology, Baltimore

**36:** 1-110 (July) 1938

Coliform Intermediates in Human Feces. L. W. Parr, Washington, D. C.—p. 1.
Effects of Sublethal Doses of Monochromatic Ultraviolet Radiation on Growth Properties of Bacteria. A. Hollaender and B. M. Duggar, Madison, Wis.—p. 17.
Classification of Acid-Fast Bacteria: II. Ruth E. Gordon and W. A. Hagan, New York.—p. 39.
Study of Gelatin Digestion by Bacillus Subtilis. A. D. Console and O. Rahn, Ithaca, N. Y.—p. 47.
Fermentation of Mucic Acid by Some Intestinal Bacteria. L. Sternfeld and F. Saunders, Chicago.—p. 53.
Gelatin as Source of Growth Promoting Substances for Bacteria. S. A. Koser, B. D. Chinn and F. Saunders, Chicago.—p. 57.
Influence of Hydrogen Ion Concentration on Dissimilation of Glucose by Aerobacter Indologenes. M. Mickelson and C. H. Werkman, Ames, Iowa.—p. 67.
Fermentation of Disaccharides by Streptococcus Thermophilus. J. M. Sherman and Pauline Stark, Ithaca, N. Y.—p. 77.
Influence of Time and Temperature of Incubation on Heat Resistance of Escherichia Coli. P. R. Elliker and W. C. Frazier, Madison, Wis.—p. 83.
Bound Water Content of Vegetative and Spore Forms of Bacteria. C. A. Friedman and B. S. Henry, Seattle.—p. 99.

## Journal of Experimental Medicine, New York

**68:** 147-298 (Aug.) 1938

*Unidentified Virus Producing Acute Meningitis and Pneumonitis in Experimental Animals. T. Francis Jr. and T. P. Magill, New York.—p. 147.
Effect of Corticosterone and Related Compounds on Renal Excretion of Electrolytes. G. W. Thorn, L. L. Engel and H. Eisenberg, Baltimore.—p. 161.
Intraperitoneal and Intracerebral Routes in Serum Protection Tests with Virus of Equine Encephalomyelitis: I. Comparison of Two Routes in Protection Tests. P. K. Olitsky and C. G. Harford, New York.—p. 173.
Production of Experimental Osteomyelitis in Rabbits by Intravenous Injection of Staphylococcus Aureus. R. H. S. Thompson and R. J. Dubos, New York.—p. 191.
Sensory Neuron Degeneration in Vitamin Deficiency: Degeneration of Posterior Columns of Spinal Cord, Peripheral Nerves and Dorsal Root Ganglion Cells in Young Pigs Fed a Diet Containing Thiamin ($B_1$) and Riboflavin But Otherwise Deficient in Vitamin B Complex. M. M. Wintrobe, D. M. Mitchell and L. C. Kolb, Baltimore.—p. 207.
Isolation of Blood Group A Specific Substance from Commercial Peptone. W. F. Goebel, New York.—p. 221.
Factors Influencing Persistence of Choriomeningitis Virus in Blood of Mice After Clinical Recovery. E. Traub, Princeton, N. J.—p. 229.
Passage of Rabbit Virulent Type III Pneumococci from Respiratory Tract of Rabbits into Lymphatics and Blood. R. Z. Schulz, Madeleine F. Warren and C. K. Drinker, Boston.—p. 251.
Relation Between Degree of Immunity of Mice Following Vaccination with St. Louis Encephalitis Virus and Titer of Protective Antibodies of Serum. H. L. Hodes and L. T. Webster, New York.—p. 263.
Sensitization and Antibody Formation with Increased Resistance to Tuberculous Infection Induced by Heat Killed Tubercle Bacilli. J. Freund and E. L. Opie, New York.—p. 273.

**Unidentified Virus Producing Meningitis and Pneumonitis.**—Francis and Magill describe an infectious agent which apparently belongs to the class of filtrable viruses but which, on the basis of the evidence at hand, is not identical with any previously known virus. The virus was repeatedly recovered in 1936 from ferrets inoculated with throat washings of patients suffering from an epidemic disease clinically indistinguishable from epidemic influenza. It is impossible, however, to conclude whether the virus is of ferret or human origin. The virus has

multiple tropisms and is pathogenic for mice, ferrets and monkeys of both Macacus rhesus and Macacus cynomolgos species. Intranasal infection of mice and ferrets causes extensive pneumonic lesions of fatal severity. Intracerebral inoculation of the virus produces in monkeys a lymphocytic choriomeningitis from which the animal recovers, while in mice a rapidly fatal choriomeningitis is produced. Fatal paralysis occurs in a moderate proportion of mice which receive the virus by intraperitoneal or subcutaneous routes, while the remainder become immune to the intracerebral test but not to the intranasal test. Subcutaneous inoculation of mice, monkeys, ferrets, rabbits and guinea pigs causes local granulomatous induration of the skin with enlargement of the regional lymph nodes. Although the new agent possesses many features in common with the virus of lymphocytic choriomeningitis and the virus of venereal lymphogranuloma, cross immunity tests have failed to yield any evidence that it is immunologically related to either the virus of venereal lymphogranuloma or lymphocytic choriomeningitis. For purposes of identification the name virus of acute meningopneumonitis is suggested.

## Philippine Islands Med. Association Journal, Manila

**18:** 347-410 (June) 1938

Wassermann Reaction of Cerebrospinal Fluid in Diagnosis of Yaws of the Nose and Throat. A. S. Fernando and G. de Ocampo, Manila.—p. 347.
Hypochromic Anemia Secondary to Multiple Parasitism. A. B. M. Sison and D. G. Tolentino, Manila.—p. 353.
Gas Bacillus Infection: Its Incidence and Treatment. J. Eduque and B. Pangilinan, Manila.—p. 359.
Submucous Resection of Nasal Septum: Plea for Its More Frequent Use Among Filipinos. L. D. Abad and J. C. Antonio, Manila.—p. 365.
Prontosil and Prontylin in Forty-Five Cases of Erysipelas. C. Mata, San Juan, Rizal.—p. 369.

## Public Health Reports, Washington, D. C.

**53:** 1181-1230 (July 15) 1938

Relative Amount of Ill Health in Rural and Urban Communities. H. F. Dorn.—p. 1181.
*The Prevalence of Undulant Fever (Brucellosis) in the United States.—p. 1195.
Studies on Fate of Selenium in the Organism. M. I. Smith, B. B. Westfall and E. F. Stohlman.—p. 1199.
Two New Species of Meringis Jordan (Siphonaptera). G. M. Kohls.—p. 1216.

**53:** 1231-1272 (July 22) 1938

The Absorption and Excretion of Lead Arsenate in Man. L. T. Fairhall and P. A. Neal.—p. 1231.
The Persistence of Viruses of Endemic (Murine) Typhus, Rocky Mountain Spotted Fever and Boutonneuse Fever in Tissues of Experimental Animals. C. B. Philip and R. R. Parker.—p. 1246.
Endemic Typhus Virus in Mice. G. D. Brigham.—p. 1251.
A Rapid Method for Drying Thick Blood Films. M. D. Young.—p. 1256.

**Undulant Fever in the United States.**—Beginning in 1927 the United States Public Health Service has received reports of cases of brucellosis from the various states. Only 112 cases were reported in 1927 but by 1937 the number had increased to 2,497. The total number of cases actually occurring is undoubtedly much larger than that reported. About one sixth of the cases reported during 1937 were in Oklahoma. Prior to 1936 few cases were recognized in Oklahoma, but during 1936 ninety-six cases were reported, followed by 431 cases in 1937. Preliminary reports for 1938 indicate that the number of cases will probably be larger than in 1937. The majority of people have no direct contact with Brucella-infected animals, and, if all milk were efficiently pasteurized or boiled before being consumed, there would be no brucellosis excepting in those whose work brings them into contact with infected animals or infected carcasses.

**53:** 1273-1335 (July 29) 1938

Frequency and Duration of Disabilities Causing Absence from Work Among Employees of a Public Utility, 1933-1937. W. M. Gafafer and Elizabeth S. Frasier.—p. 1273.
*Antagonism Between Species of Malaria Parasites in Induced Mixed Infections: Preliminary Note. B. Mayne and M. D. Young.—p. 1289.
*Toxicology of Phenyldichlorarsine: II. Response of Man to PDA-Oil Mixtures. R. R. Sayers and H. C. Dudley.—p. 1292.

**Antagonism Between Species of Malaria Parasites.**—In combining Plasmodium vivax and Plasmodium malariae in the treatment of sixteen patients with dementia paralytica, Mayne and Young found that twelve demonstrated the presence of both species whereas four showed only one species. When the two species of parasites appeared in the peripheral blood stream concomitantly, one rapidly became predominant and the other tended to disappear. There is an apparent antagonistic action of one species against the other. In the mixed infection of Plasmodium vivax and Plasmodium malariae the predominant species is not always the same. Of the twelve mixed infections, nine showed Plasmodium vivax as predominant while three showed Plasmodium malariae. Owing to the suppression of one species by the predominant species it seems evident that there are many more cases of mixed infections than are actually reported, especially in surveys in the field under normal conditions, where only a few examinations are made.

**Toxicology of Phenyldichlorarsine.**—An examination of the results that Sayers and Dudley obtained from sixteen men subjected to cutaneous tests of the vesicant qualities of 1 per cent oil mixtures of phenyldichlorarsine shows that there is a marked difference in the susceptibility of certain persons to their action. Three men showed definite initial cutaneous reactions, seven gave no subjective or objective symptoms of reaction, while six showed varying degrees of susceptibility from moderate to slight. It seems probable that preliminary cutaneous tests would be helpful in determining those workers who would have a marked tendency toward cutaneous reactions when working in wood-treating plants. By selecting workers showing no cutaneous reaction, many of the untoward effects of the oil mixtures of phenyldichlorarsine could be prevented. Protection is possible by spreading a salve, prepared from petrolatum and ferric hydroxide, over the exposed cutaneous areas of the worker. Impregnated wood free from surface oil causes no reactions when applied to the skin of men for as long as one hour. Steaming after impregnation removes surface oil and renders the oil mixture in the body of the wood nonvesicant to rabbits.

## Puerto Rico J. Pub. Health & Trop. Med., San Juan

**13:** 427-540 (June) 1938

Ashford's Bibliography of Sprue. F. M. Hanes, Durham, N. C.—p. 427.
The Stomach in Tropical Sprue. A. Rodriguez Olleros, San Juan, —p. 503.
Chromoblastomycosis in the Dominican Republic. A. L. Carrión, San Juan, and M. F. Pimentel-Imbert, Trujillo City, Dominican Republic. —p. 522.

## South Carolina Medical Assn. Journal, Greenville

**34:** 173-200 (July) 1938

Group Hospitalization in South Carolina. A. E. Baker, Charleston.—p. 173.
Traumatic Injuries of the Thorax. Deryl Hart, Durham, N. C.—p. 175.

## Texas State Journal of Medicine, Fort Worth

**34:** 193-256 (July) 1938

Preventive Pediatrics. R. A. Strong, New Orleans.—p. 200.
Culture of Human Marrow. E. E. Osgood, Portland, Ore.—p. 206.
*Action of Sulfanilamide: Failure to Demonstrate Antihemolytic Antifibrinolytic and Antitoxic Effect of the Drug. H. A. Kemp, Dallas.—p. 208.
Observations and Notes on Culture of the Gonococcus. B. F. Stout and D. A. Todd, San Antonio.—p. 211.
Peptic Ulcer Treated by Posterior Pituitary Extract: Two Years' Experience. M. H. Metz and R. W. Lackey, Dallas.—p. 214.
Metrazol Therapy of Schizophrenia. L. Barbato, Galveston.—p. 220.
Practical Cultural Methods for Detection of Typhoid and Related Bacilli. S. W. Bohls and J. V. Irons, Austin.—p. 227.
Night Blindness as Determined by Biophotometer. T. J. Vanzant, Houston.—p. 231.
*Air Conditioning in Relation to Upper Respiratory Infections. R. E. Windham, San Angelo.—p. 235.
Simple Method for Closing Thin Gastric and Duodenal Tubes Temporarily. H. Lamm, Kansas City, Mo.—p. 239.

**Action of Sulfanilamide.**—In an effort to repeat the observations of Osgood, Kemp used two sets of hemolytic streptococci: one set of four cultures from a group of patients on whom sulfanilamide seemed to have exerted a most beneficial effect; the other (four cultures) from patients who had received vigorous treatment with sulfanilamide without beneficial effect, all dying of their streptococcic infection. To test the antihemolytic effect of the drug, blood agar plates containing sulfanilamide in dilutions of 1:1,000, 1:10,000 and 1:100,000 were

seeded with the foregoing cultures. No significant differences could be observed between these plates and plates containing no sulfanilamide. As a test of the antitoxic qualities of the drug, an attempt was made to see if dilutions as high as 1:1,000 would neutralize the streptococcus toxin used for the determination of susceptibility to scarlet fever, the Dick toxin. Fifteen positive reactors were discovered in testing seventy-two medical students and these reactors were inoculated simultaneously with Dick toxin in the skin of one forearm and with a mixture of sulfanilamide 1:1,000 and Dick toxin in the skin of the other forearm. The two sites of injection displayed the positive reaction at the same time and with the same intensity, there being no neutralization of the toxin by the drug at 1:1,000. Concentrations as high as 1:3,500 failed to neutralize the fibrinolytic qualities of the cultures, even when amounts as small at 0.2 cc. of a twenty-four hour broth culture were used with the standard amount of serum used in such tests. The same high concentrations of sulfanilamide did not interfere with fibrin formation in control tubes carrying no streptococci. Whatever the action of sulfanilamide, the in vitro methods fail to reveal it. If the beneficial effects of the drug are as real as they are apparent, the mode of action must be sought for in living tissue as Osgood has tried to do. Whatever its reactions there, it would not appear that these reactions belong to the category of immune substances. The immune substances, antibodies, are characterized by their reactions both in vitro and in vivo. Since the drug failed to neutralize the streptococcus toxins (hemolysin, dermatoxin and fibrinolysin) and since streptococcus antitoxin will neutralize these toxins both in vivo and in vitro, it seems reasonable to conclude that sulfanilamide is not an antitoxin, whatever its mode of action.

**Air Conditioning and Infections of Respiratory Tract.**—Windham states that pathogenic effects of catarrh and colds may be linked to the autonomic nervous system because when climatic changes are frequent and severe the autonomic nervous system is fatigued. Long exposure to cold produces dryness of the mucous membrane and leads to susceptibility to infections of the upper part of the respiratory tract. Climates and diseases are interrelated in an active role, for in regions of highly changeable temperature and pressure the population is usually badly affected with chronic respiratory and arthritic troubles, sinusitis, chronic bronchitis, tuberculosis and rheumatoid arthritis. With the man-made climate or weather in proper air conditioning, the patient can be placed in rooms suitable to his particular disease and expect to get maximal results in the minimal time. For general comfort the temperature should be kept from 10 to 15 degrees below the outside temperature in summer, with from 50 to 55 per cent relative humidity. Rooms for arthritic patients should maintain a temperature of from 80 to 85 F., from 35 to 30 per cent relative humidity; for tuberculosis 68 F. and from 40 to 50 per cent relative humidity; for common colds and respiratory infections from 70 to 72 F. and 55 per cent relative humidity. Patients having infections of the respiratory tract placed in air conditioned rooms have shown a much more rapid and satisfactory recovery, and no patient placed in air conditioned rooms has acquired any colds or other respiratory disorders.

## United States Naval Med. Bulletin, Washington, D. C.

**36:** 327-454 (July) 1938

Field Sanitation. W. L. Mann.—p. 327.
Effect of the Age of Neoarsphenamine on Reaction Expectancy. C. S. Stephenson, T. F. Probey and W. T. Harrison.—p. 425.
Effect of Moisture and Age on Stability of Neoarsphenamine. T. F. Probey and W. T. Harrison.—p. 429.
Insecticidal Powders: Comparative Study. F. S. Johnson, with technical assistance of A. G. Vallee.—p. 435.
A Presumptive Test for Potency of Cowpox Virus. J. B. Moloney.—p. 445.

## West Virginia Medical Journal, Charleston

**34:** 337-388 (Aug.) 1938

The Doctor as a Citizen. C. W. Waddell, Fairmont.—p. 337.
Standardization of Laboratory Technic. G. H. Barksdale, Charleston.—p. 346.
Typhoid Fever. A. M. Price, Charleston.—p. 349.
Postgraduate Extension Courses in Pediatrics. G. M. Lyon, Huntington.—p. 352.
Professional Relationship Between Physician and Pharmacist. J. L. Hayman, Morgantown.—p. 358.
Teratoma of the Testis: Case Report. G. G. Irwin, Charleston.—p. 363.

# FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

## British Journal of Children's Diseases, London

**35:** 85-164 (April-June) 1938

Hysteria in Childhood. Mildred Creak.—p. 85.
Addison's Disease in Children. F. R. B. Atkinson.—p. 96.
Subcutaneous Emphysema in the Newborn. G. Slot and W. D. Brown.—p. 116.

## British Journal of Dermatology and Syphilis, London

**50:** 333-398 (July) 1938

Epithelioma Adenoides Cysticum. L. Cavatard.—p. 333.
Further Observations on Dermatitis Due to Celery in Vegetable Canning. S. A. Henry.—p. 342.
*Possible Trichophytic Granuloma: Two Cases. J. F. Smith.—p. 352.
Recurrent Bullous Eruption of the Feet. E. A. Cockayne.—p. 358.

**Trichophytic Granuloma.**—Smith describes the cases of two boys with a peculiar granulomatous eruption involving the scalp, face, limbs, groin, penis and buccal mucosa, with a prolonged course, little if at all influenced by treatment and ending in recovery with slight scarring. The finding of mycelium in sections from a recent lesion in the second case was the only positive suggestion as to the cause. The failure to respond to massive doses of potassium iodide was against a diagnosis of blastomycosis or sporotrichosis. The mycelium suggests a hyphomyces rather than a blastomyces, and no torulae could be detected, but the clinical appearances, and particularly the severe involvement of the buccal mucosa, with ultimate scarring, were unlike those of any deep trichophytia which the author has seen.

## British Journal of Radiology, London

**11:** 425-504 (July) 1938

Historadiography. P. Lamarque.—p. 425.
Kymography as Aid in Differential Diagnosis of Mediastinal Tumors. A. Meyer.—p. 436.
Two Radiographic Teaching Models. W. E. Boyd.—p. 444.
Construction of Superficial Applicators for Radium Therapy. R. Paterson and W. MacVicar.—p. 452.
Geometric Factors in Measurement of Radiation in Roentgens. C. C. Lauritsen.—p. 471.
X-Ray Methods in Investigation of Failure of Metals. H. J. Gough and W. A. Wood.—p. 479.
Theory of Action of Radiations on Biologic Materials Capable of Recovery: Part I. Time-Intensity Factor. D. E. Lea.—p. 489.
Physical Measurements in High Voltage X-Ray Therapy. R. Phillips and G. S. Innes.—p. 498.

## British Medical Journal, London

**2:** 107-162 (July 16) 1938

Cerebral Integration of Ocular Movements. G. Holmes.—p. 107.
*Chronic Mastitis and Breast Cancer: Family History of Five Sisters. W. S. Handley.—p. 113.
*Dysfunctional Uterine Bleeding Treated with Progesterone. T. N. Macgregor.—p. 116.
Brodie's Abscess and Its Differential Diagnosis. J. F. Brailsford.—p. 119.
Parasitic Fetus Successfully Removed by Operation. M. Greenberg.—p. 123.

**Chronic Mastitis and Breast Cancer.**—Handley discusses the histories of five sisters with cancer of the breast observed for nineteen years. Their mother died at the age of 69 of cancer of the liver and her mother at the age of 37 of abdominal cancer, probably gastric, since it was attended by persistent vomiting. Five separate breast cancers in the family have been treated with radical operation—four by the author and one by Warwick; and in addition two simple mastectomies have been done—one for incipient cancer, the other for precancerous mastitis. Two of the sisters have died of breast cancer and three are well at the time of writing. The two sisters who died survived operation eleven and nine years, respectively. The results offer encouragement that routine mastectomy for chronic mastitis can be safely rejected in favor of roentgen treatment followed by periodic examination, with mastectomy in reserve if danger signals show themselves. Though the author believes radiation to be a valuable prophylactic, it cannot in all cases be an efficient substitute for surgery.

**Uterine Bleeding Treated with Progesterone.**—Macgregor presents the results of thirteen cases of irregular uterine bleeding, essentially associated with a disturbance of the pituitary-ovarian mechanism, treated with progesterone, 5 mg.

given daily. In ovular bleeding the treatment was given two or three days before the expected anomalous bleeding, the aim being to maintain endometrial stimulation during the time of ovulation and thus tide over the period when the estrogenic content of the blood was lowered. In hemorrhagic metropathia progesterone may be given at any phase. During the bleeding stage 5 mg. was administered daily until the bleeding was controlled. During the amenorrheic phase 5 mg. was given daily, the total dosage amounting to from 25 to 30 mg. Three of the five patients with the ovular type of bleeding have had regular menstruation for the last eighteen to twenty-two months. One patient had three regular periods after cessation of therapy; she then became pregnant and aborted at the end of the second month of gestation. The other patient, though not completely well, has now only a brownish discharge, whereas formerly she had frank hemorrhage for a few days between every two periods. In four of the seven cases of anovular bleeding menstruation became normal in duration and periodicity, in two of which there has recently been a recurrence of the irregularity. In the remaining three patients the uterine endometrium was examined microscopically before and after treatment and as a result of the treatment the hyperplastic endometrium has been changed into a pseudosecretory phase. These patients have only recently been under treatment and two have had two normal periods. Comparatively few favorable results follow the indiscriminate use of progesterone therapy.

## Journal of Laryngology and Otology, London

**53:** 417-484 (July) 1938

*Progressive Facial Palsy Produced by Intratemporal Epidermoids. G. Jefferson and A. A. Smalley.—p. 417.
Thyroxine Therapy in Otosclerosis: Report of Forty-Two Cases. M. A. Goldstein.—p. 444.

**Facial Palsy from Intratemporal Epidermoids.**—During the last five years Jefferson and Smalley encountered six cases in which a slowly progressive facial palsy has been proved to be due to an epidermoid lodged within the temporal bone. No infection was present in any of the cases, and three patients had never had otitis media. All, however, were deaf to a greater or lesser degree on the side of the palsy, and this fact led to a painstaking investigation of the temporal bone for a possible causative lesion. The facial paralysis had in each case taken several months to develop and was in that respect totally unlike Bell's palsy. The syndrome is related to the pure pressure effect of epidermoids (as is the case with the intradural variety) and not to the well known septic condition of the ordinary cholesteatoma. The nature of the epidermoids is discussed and the view is held that most, if not all, of the present series were of embryonal origin.

## Journal of Tropical Medicine and Hygiene, London

**41:** 213-228 (July 1) 1938

Brief Notes on Cysticercosis and Luetic Pseudocysticercosis. A. Castellani and G. Acanfora.—p. 213.
Agglutinins for Typhoid and Salmonella Enteritidis in Serum of Individuals Inoculated with Typhoid Vaccine: Enteritidis Mouse Protection as Means of Assaying Effectiveness of Typhoid Vaccines. M. Mollari, R. J. Reedy and W. A. Randall.—p. 218.
Trypanosomiasis Gambiensis: Some Observations in Uganda and Their Bearing on Prophylaxis. A. A. F. Brown.—p. 220.

**41:** 229-244 (July 15) 1938

The First Survey of Ringworm in Egypt. N. Gohar.—p. 229.
Trypanosomiasis Gambiensis: Some Observations in Uganda, and Their Bearing on Prophylaxis. A. A. F. Brown.—p. 234.

## Lancet, London

**2:** 61-120 (July 9) 1938

Seven Gifts. R. Hutchison.—p. 61.
Diabetes Mellitus: Survey of Changes in Treatment During the Last Fifteen Years. G. Graham.—p. 62.
Modern Classified Treatment of Varicose Veins. P. Clarkson.—p. 69.
Irritable Bladder of Chronic Cervicitis. J. Young and A. J. Cunningham.—p. 73.
*Antibacterial Action in Vitro of 2-(*p*-Aminobenzenesulfonamido) Pyridine on Pneumococci and Streptococci. A. Fleming.—p. 74.

**Bactericidal Action of 2-(*p*-Aminobenzenesulfonamido) Pyridine.**—Fleming performed experiments to see whether 2-(*p*-aminobenzenesulfonamido) pyridine has any action on bacteria in vitro and whether any reasonable explanation could be given of its curative action. The drug has no deleterious action on leukocytes in concentrations up to 1:8,000, which is stronger than is likely to be attained in the body. The use of deleukocyted blood gives the true antibacterial effect of the chemical, for such blood has no bactericidal power toward the pneumococcus. The test organism was a pneumococcus (type 23). Infected deleukocyted blood was mixed with equal volumes of various dilutions of the drug in physiologic solution of sodium chloride and incubated in slide cells. In an implant of 100 cocci all the cocci survived and grew out, but there was a definite inhibition of growth as was shown by the size of the colony. In a concentration as low as 1:256,000 the colonies were smaller and in 1:128,000 they were in twenty-four hours only minute. In deleukocyted blood, therefore, the drug has no power of killing pneumococci, but it has an evident bacteriostatic power even when present only in small amount. Defibrinated blood containing its full complement of leukocytes was capable of preventing the growth of large numbers of pneumococci. A comparison of experiments with defibrinated and deleukocyted blood brings out that: 1. Normal human defibrinated blood can prevent the growth of large numbers of pneumococci. 2. If the leukocytes are removed from such blood, all the pneumococci implanted grow out freely. 3. In deleukocyted blood 2-(*p*-aminobenzenesulfonamido) pyridine has no bactericidal power but delays the growth of pneumococci. 4. In normal human blood the compound completely prevents the growth of pneumococci even when present only in high dilution. Experiments exactly similar to the foregoing were made with blood and deleukocyted blood implanted with a group A hemolytic streptococcus ("Richards") and it was found that with hemolytic streptococci, as with pneumococci, the drug does not kill the organisms but delays their growth and (probably for this reason) inhibits the development of hemolysin. In defibrinated blood containing its full complement of leukocytes with an implant of 2,900 "Richards" streptococci per cell there were in the control cell large confluent areas of hemolysis, and it was obvious that a considerable number of colonies of streptococci had developed. In the weakest concentration only four small colonies were visible, and in 1:64,000 no growth occurred even after the cells had been incubated for several days. If blood is rendered "immune" by the addition of some specific immune serum, the apparent effect of the chemical is enhanced. It is suggested that, to obtain the best results with the drug, patients should be immunized actively or passively.

**2:** 121-178 (July 16) 1938

Diabetes Mellitus: Survey of Changes in Treatment During Last Fifteen Years. G. Graham.—p. 121.
Acute Appendicitis Treated by Operation: Record of 1,200 Cases. C. C. Holman.—p. 126.
Acute Appendicitis: Study of 400 Consecutive Cases Treated by Immediate Operation. I. Aird.—p. 127.
Heparin and Coronary Thrombosis in Experimental Animals. D. Y. Solandt and C. H. Best.—p. 130.
*Postpartum Necrosis of Anterior Pituitary: Effect of Subsequent Pregnancy. H. L. Sheehan and R. Murdoch.—p. 132.
Sudden Appearance of Senility After an Accident. A. P. Thomson.—p. 135.
*Chemotherapeutic Experiments on Virus of Lymphogranuloma Inguinale in Mouse. F. O. MacCallum and G. M. Findlay.—p. 136.

**Postpartum Necrosis of Anterior Pituitary.**—Sheehan and Murdoch encountered fifty-four patients who had only a moderate anterior pituitary insufficiency and certain of these showed a definite improvement without specific treatment. This improvement was sometimes spontaneous and sometimes the result of a subsequent pregnancy. Whereas spontaneous improvement is uncommon and rarely great, there is nearly always a pronounced and often complete recovery if the patient becomes pregnant again. The improvement in the general health is usually quite obvious when the patient is only a few months pregnant. If the delivery is normal the improvement is maintained permanently. Certain conditions, such as retained placenta, which have caused hemorrhage at the original delivery may recur in a subsequent delivery and lead to serious collapse again. If this happens the improvement due to the pregnancy may be partly or completely lost, presumably as a result of a further necrosis. Apart from this obvious cause there are occasional cases in which the condition of the patient does not improve after a normal pregnancy and delivery; it is not clear whether the failure to respond is due to the pituitary itself or

to the related endocrine glands. These are exceptions; the normal result of subsequent pregnancy is a striking symptomatic recovery. The most satisfactory explanation of the improvement appears to be that the part of the anterior pituitary which escaped the original necrosis undergoes normal physiologic hypertrophy during pregnancy but that it does not involute after the delivery to the size that it was before the onset of the pregnancy. The rational treatment of cases of pituitary insufficiency due to postpartum necrosis is to encourage a further pregnancy, despite the natural disinclination of the patient. The utmost care must be taken to avoid any hemorrhage or collapse at delivery; any obstetric complication which can be anticipated must be avoided. Blood donors must be present and all arrangements must be ready for immediate transfusion at delivery.

**Chemotherapeutic Experiments on Virus of Venereal Lymphogranuloma.**—MacCallum and Findlay infected intracerebrally between 200 and 300 mice with two strains of the virus of venereal lymphogranuloma. The compounds employed in treatment have been *p*-aminobenzenesulfonamide (sulfanilamide), which has been given subcutaneously suspended in olive oil, *p*-benzyl-aminobenzenesulfonamide (proseptasine), given by mouth, and a dextrose derivative of 4:4′-diaminodiphenylsulfone, which has been given both subcutaneously and orally. With both the sulfanilamide and the dextrose derivative a considerable proportion of the treated mice were saved. The first possibility that suggested itself was that some intercurrent bacterial infection was responsible for the death of the control mice and that it was this bacterial infection, rather than the virus disease itself, which was being controlled by the drugs. However, cultures of the brains of control and treated mice failed to show any growth on ordinary bacteriologic mediums, so that the evidence is in favor of the view that it is the virus itself which is being acted on. At present it is impossible to suggest a reason why the virus of venereal lymphogranuloma is susceptible to chemotherapeutic action while so many other viruses are not susceptible. Oakley (1938) found that, provided the virus inoculum was small, the dextrose derivative of 4:4′-diaminodiphenylsulfone had a slight but significant action in curing mice infected with influenza virus.

## Medical Journal of Australia, Sydney

**1:** 1077-1114 (June 25) 1938

Cerebral Vascular Accidents and Their Treatment. C. T. C. de Crespigny.—p. 1077.
Surgical Treatment of Essential Hypertension: Early Results in Three Cases. G. Phillips.—p. 1081.
Treatment of Head Injuries in General Practice. R. A. Money.—p. 1084.
Some Aspects of Leptospirosis Problem in Australia. W. C. Sawers.—p. 1089.

**2:** 1-34 (July 2) 1938

The Medical Aspects of Military Science. R. M. Downes.—p. 1.
Expeditious Method of Cutting Bone Flaps in Vault of Skull. H. C. Trumble.—p. 9.
Clinical Significance of Blood Pressure Readings: Postgraduate Lecture. C. B. Blackburn.—p. 13.
*Injection Treatment of Primary Hydrocele and Spermatocele. A. G. S. Cooper.—p. 19.

**Injection of Hydrocele and Spermatocele.**—During the last six years Cooper has treated eight cases of chronic primary hydrocele and two of spermatocele by injections, with satisfactory results. For the injection, quinine and urethane, quinine dihydrochloride and Morestin's fluid have been employed. The latter solution has yielded the best results. Morestin's fluid consists of equal parts of phenol, glycerin and alcohol. In treatment, the technic consisted of simple paracentesis with a serum needle, aspiration of as much hydrocele fluid as possible, and injection of Morestin's fluid through the same needle, approximately 1 cc. being used for each 20 to 30 cc. of fluid aspirated, up to a maximal dose of 40 cc. A preliminary superficial injection of local anesthetic was always administered. The injected fluid was massaged into every part of the sac of the hydrocele and a suspensory bandage was applied. Almost invariably a secondary accumulation of fluid occurs, and this should be aspirated ten days after the injection, without further treatment. Most of the patients have been under observation for years and no recurrences or other disabilities have been observed or reported. The efficacy of injection treatment in the classic type of long-standing hydrocele with excessively thickened parietal tunica after numerous tappings is doubtful.

## Bruxelles-Médical, Brussels

**18:** 1156-1188 (July 3) 1938

Diagnosis of Acute Leukemia. P. Lambin.—p. 1156.
*Epidemiology and Prophylaxis of Icterohemorrhagic Spirochetosis or Weil's Disease. A. Hougardy.—p. 1163.
Action of Icoral After Spinal Anesthesia. R. Schockaert and J. Lambillon.—p. 1173.

**Spirochetal Jaundice.**—Hougardy thinks that the physician encountering a case of infectious icterus will more often than formerly think of the possibility of spirochetal jaundice. He reviews the principal elements in the pathogenesis of icterohemorrhagic spirochetosis, discussing the animal vectors of Leptospira and the part played by water in the transmission. Further, he discusses icterohemorrhagic spirochetosis as an occupational disease in sewer workers and miners and the transmission of the disease by pigs, which explains the occurrence of the disease in butchers. He stresses the importance of the supervision of bathing establishments, particularly on rivers, in which protection against rat infestation is essential. He discusses rat proofing of buildings and deratization by mechanical and toxic means. The cooperation of the public should be enlisted.

**18:** 1189-1219 (July 10) 1938

*Several Toxic Volatile Industrial Solvents. D. Glibert.—p. 1189.
Partitioning-off or Exclusion of Small Pelvis from Abdominal Cavity. J. Rouffart-Marin.—p. 1203.

**Toxic Industrial Solvents.**—Glibert thinks that, because of the growing use of volatile solvents in industry, physicians are likely to encounter some of the harmful effects which may be caused by them. There are a great number of these industrial poisons but in this paper the author discusses only the most dangerous and the most widely distributed of the toxic solvents, admitting nevertheless that other volatile solvents have proved injurious under some exceptional circumstances. He does not review in detail the dangers of benzene and of its homologues toluene and xylene since the harmfulness of these highly toxic bodies is well known to physicians. He also omits from this discussion carbon disulfide, the acetone group and others. He gives his attention chiefly to the substances of the ethane and ethylene group; tetrachlorethane, pentachlorethane, dichlorethylene, trichlorethylene and perchlorethylene. He shows that in estimating the toxicity of volatile solvents it is necessary to take into consideration several factors such as the origin, the degree of purity and the instability. He points out that industrial benzene for instance is not a definitely defined substance but is a chemical mixture of varying compositions. Its composition depends in part on the nature of the petroleum from which it is extracted, because some crude petroleums contain more of one kind of hydrocarbons and others contain more of another type of hydrocarbons. The author further discusses the inexactness of the factors on which is based the theoretic evaluation of the toxicity. He shows that the experimentally established toxicity often differs considerably from the one calculated on the basis of a formula and stresses that in estimating the harmfulness of a volatile industrial solvent it is necessary to take into account the particular circumstances under which it is used: the tension and density of the vapor, the temperature necessary for its use, the evaporation in the air, the more or less extended use of the product and the possibility of recuperation for the worker. He discusses in detail each of the aforementioned volatile solvents of the ethylene and ethane group and then classifies these and the other solvents (not discussed) into four distinct categories. Reviewing the literature on this problem, he directs especial attention to the publication of the Medical Research Council on "Toxicity of Industrial Organic Solvents."

## Journal de Médecine de Lyon

**19:** 415-442 (July 5) 1938

Exploration of Bone Marrow by Sternal Puncture. V. Cordier, P. Croizat and L. Revol.—p. 415.
*Surgical Treatment of Permanent Arterial Hypertension: Its Indications by Anesthetic Infiltration of Splanchnic Nerves. F. Paliard and P. Etienne-Martin.—p. 433.

**Surgical Treatment of Hypertension.**—Paliard and Etienne-Martin point out that if failures are to be prevented in the surgical treatment of arterial hypertension it is important to determine beforehand whether the surgical treatment will be effective. They briefly review the present status of the surgical treatment of permanent arterial hypertension. They

cite four different types of interventions: (1) adrenalectomy either on one side (left) or partially on both sides, (2) splanchniectomy on the left side, which can be bilateralized for the first and second lumbar ganglions, (3) a mixed operation, that is, adrenalectomy on one side and splanchniectomy on the other, and (4) renal enervation. The authors reject the anterior radicotomies of Adson and Craig, which they regard as too mutilating, as well as thyroidectomy, in which failure seems certain. After pointing out that failures might entirely discredit surgical interventions for hypertension, they describe the clinical histories of three cases in which anesthetic infiltration of the splanchnic nerves caused temporary cessation of the functional disturbances. In summarizing their observations on these three cases they say that the anesthetic infiltration of the splanchnic nerves deserves to be extended in hypertension, because it serves two ends: 1. It has a temporary therapeutic effect in that it counteracts some of the grave subjective symptoms, and if it reduces the hypertension it removes the immediate danger of a grave vascular accident. 2. The greater importance lies in the fact that the infiltration, as a physiologic section of the nerves, helps in deciding the surgical intervention. If this physiologic section of the splanchnic nerves causes a reduction in the tension, the surgical intervention is indicated; if, on the other hand, it fails to do so, surgery is contraindicated.

## Lyon Chirurgical

**35:** 385-512 (July-Aug.) 1938

Retrograde Ureteropyelography in Cancer of Kidney. R. Gayet.—p. 385.
*Results of Treatment of Certain Articular Fractures by Infiltration with Procaine Hydrochloride and Immediate Active Mobilization. P. Branzen and E. Blum.—p. 417.
Perforated Ulcers of Stomach and Duodenum. B. Herzberg.—p. 436.

**Procaine Hydrochloride and Mobilization in Articular Fractures.**—Branzen and Blum resorted to infiltration anesthesia only after exact roentgenologic examination of the fracture. In making the infiltration they employ a 1 or 2 per cent solution of procaine hydrochloride without epinephrine. They inject the contents of a syringe of 10 cc. capacity in or near the site of the fracture. The diffused liquid blocks all nervous passages. Contracture and pain disappear instantaneously if the injection is made exactly into the fracture. In the course of the first week the infiltrations are made daily. After that they are given at intervals of two or three days. Depending on the nature of the fracture, the member may be placed in a sling for the first few days or may be left completely free. Staying in bed is necessary only if the fracture is accompanied by such disorders as shock or cerebral concussion. After clinical consolidation is accomplished, the infiltrations are made into the regions indicated as painful by the patients. The authors describe and illustrate the histories of eight cases. The value of this therapeutic method can be estimated by the roentgenograms of the bone lesions and by the photographs of the functional results. As the ideal indications for this method the authors mention (1) the partial fractures of the elbow (epitrochlear, olecranon, head of radius), (2) fractures of the upper end of the humerus in aged subjects, (3) partial fractures of the head of the humerus, complicating the dislocation of the shoulder in patients of all ages, (4) partial fractures of the scapula, (5) fracture of the clavicle without or with slight dislocation in adults and especially in aged persons, (6) fractures at the lower end of the humerus or radius, when reduction is not necessary, especially when the subjects are aged or obese, and (7) fractures of the carpus or metacarpus without dislocation. As regards the lower extremities, the indications for this treatment are rare. However, it has been employed (1) in fractures of the kneecap without dislocation, (2) in certain partial fractures of the tibial disk in aged subjects and (3) in fractures of the tarsus without dislocation and in metatarsal fractures.

## Presse Médicale, Paris

**46:** 1129-1144 (July 20) 1938

*Synthesis of Purines in Patients with Gout: Remarks on Effects of Apuric Diet. F. Coste, A. Grigaut and M. Lamotte.—p. 1129.
Effusions in Extrapleural Pneumothorax. O. Monod, J. Garcia-Bengochea and P. Bruce.—p. 1131.

**Purines in Gout.**—Coste and his associates studied the effects of an apuric diet in patients with gout. They give a list of foods excluded from the diet and a list of permitted foods. The diet excludes as much as possible all nucleoproteins and purines of animal and vegetable origin. Of the thirty-four patients who were subjected to the diet, some were observed for several years. In the majority of the patients with gout the plasmatic uricacidemia and particularly the globular uricacidemia was greatly reduced. The regimen, which is referred to as the apuric standard diet, apparently leads at first to a reduction in the excretion of urates in the urine, but when it is prolonged there generally results an augmentation of uraturia in relation to the increased figures before the diet was begun. It was observed in eleven patients that, after from six weeks to twenty-four months of the apuric standard diet, the daily uratic excretion remains rather high. In the majority of cases the apuric standard diet produces a considerable amelioration, provided it is continued for a sufficient length of time. Often the improvement is such that the attacks of gout are completely suppressed. On the whole, the diet is well tolerated; in the majority of patients it produces neither fatigue nor emaciation. It has been demonstrated that adults with gout, when submitted to a diet without purines, continue to synthesize purines in considerable quantities; this does not result in a noticeable impairment of the organism; it must be admitted that there exists in these patients with gout a puric synthesis from the proteins or amino acids contained in the foods or in the tissues. Nevertheless, the restriction of the alimentary nucleoproteins results in an appreciable decline in the plasmatic and globular uricacidemia and in a regression or complete suppression of the attacks of gout. The addition of nucleoproteins of vegetable origin to this standard diet exerts a variable, often a slight influence on the uratic elimination and on the uricacidemia; in one patient it provoked the return of painful crises, in others it was well tolerated. It remains to be determined whether the therapeutic effects of the apuric standard diet results from the suppression of the nucleoproteins and purines or from the suppression of alcoholic drinks or from both these factors. The authors are of the opinion that both factors play a part.

## Schweizerische medizinische Wochenschrift, Basel

**68:** 901-924 (July 30) 1938. Partial Index

Symptomatology of Tumors of Posterior Cranial Fossa, Particularly of Cerebellum. H. Krayenbühl.—p. 901.
New Aspects of Treatment and Prophylaxis of Malaria. M. Mayer.—p. 905.
Question of Infection of Accidental Wounds. F. Lang.—p. 910.
*Clinical Observations in Measles. P. Robert.—p. 914.

**Measles.**—Robert reports observations which he made in the course of an epidemic of measles during the winter of 1936-1937. He gave especial attention to the diagnostic value of the leukocytic blood picture, to the vitamin C metabolism and to the oral bacteriologic flora. He studied the white blood picture in fifty-three patients with typical uncomplicated measles and found that, contrary to the statements in some textbooks, there is no typical blood picture during the exanthem of measles. In one third of the cases studied the classic leukopenia which supposedly characterizes the severest stage was missing. Moreover, in about 50 per cent of the cases it was impossible to detect a disappearance of the eosinophils during the stage of eruption. The appearance of numerous monocytes at the time of the exanthem could be corroborated. The author regards as especially noteworthy in this material the unexpected appearance during the exanthematic period of numerous plasma cells. Since he studied only the diagnostic value of the leukocytic blood picture he disregards the post exanthematic changes in the blood. In fifteen of the patients with measles he made protracted vitamin C tolerance tests and detected a greater or lesser deficit of vitamin C in twelve. He says further that at the clinic in Basel the examination of oral bacteriologic flora is a routine measure at the time of hospitalization and at the time of discharge for all patients with measles and with scarlet fever. It was found that the oral flora of patients with measles is characterized by a predominance of white and yellow staphylococci. There was no essential difference between the oral floras at the time of hospitalization and of discharge, or between the oral floras of the cases with or without complications.

## Semana Médica, Buenos Aires

**45:** 117-172 (July 21) 1938. Partial Index

Psychopathologic Study of Emotional Psychoses. G. Bosch and E. E. Krapf.—p. 117.
Grave Uremia from Glomerulonephritis in Children: Cases. J. G. Fernández, M. A. Carri, J. M. Camaña and J. D. Capurro.—p. 123.
*Specific Reaction to Staphylococcus Toxoid in Diabetes. V. H. Richeri and O. Gómez.—p. 127.
Medical Treatment of Typhoid. F. Arocena.—p. 149.

**Staphylococcus Toxoid in Diabetes.**—Richeri and Gómez state that partial immunity should be induced in diabetes by the administration of staphylococcus toxoid in order to prevent staphylococcic pyogenic infection, which frequently develops in the course of diabetes. They determined the amount of antibodies in the blood serum of seventeen patients who had diabetes before, during and after treatment with staphylococcus toxoid. The treatment consisted of four subcutaneous injections of 0.1, 0.2, 0.5 and 1 cc. of a toxoid preparation of the Instituto Nacional Bacteriológico of Buenos Aires, which were given at intervals of four days. The antitoxic values of the blood serum were shown by the concentration of antibodies in the serum, which were calculated from the inhibition of a standard staphylococcus toxin by the blood serum in the presence of erythrocytes of rabbits used as reagent indicators for hemolysis. The authors found that the mechanism of immunity in diabetes is normal and that the administration of staphylococcus toxoid to the patients stimulates the production of specific antibodies. The immunity induced by the treatment with staphylococci lasts more than three months.

## Chirurg, Berlin

**10:** 497-528 (July 15) 1938

*So-Called Freshening of Wounds According to Friedrich: Primary Suture of Wound or Keeping Wound Open. E. Heller.—p. 497.
Considerations on Evipan Anesthesia (the Sodium Salt of N-Methyl-Cyclo-Hexenyl-Methyl Barbituric Acid). H. Fründ.—p. 501.
Arthrosis Deformans of Knee Joint Caused by Injury with Foreign Body. H. Ahle.—p. 505.
Treatment of Basal Pulmonary Abscess. D. M. Juzbašić.—p. 508.
Complete Inversion of Uterus. C. Spyropoulos.—p. 510.

**Freshening of Wounds.**—Heller shows that Friedrich's term "anfrischung" or freshening of wounds has been misunderstood and has led to therapeutic errors. Having worked with Friedrich for many years, he tries to clarify Friedrich's stand and so avoid further misunderstanding. He emphasizes that Friedrich employed suture of wounds only after complete excision, and that in case of incomplete excision he left the wounds open and drained them; that is, Friedrich recommended two ways for the surgical prevention of the infection of wounds: (1) the complete excision with suture of the wounds within the first six hours, in order to prevent an infection, and (2) the open treatment of the wound in which there was danger of infection; that is, in which complete excision was impossible. The author says that whereas the first method is now of slight practical importance, it having been abandoned, the second method is important and is still in use. He thinks that misunderstandings, such as the impression that Friedrich recommended primary suture for incompletely excised wounds, might have been avoided had Friedrich refrained from using the indefinite term "freshening" and had used excision instead. The author shows that, in view of the increasing number of traffic accidents, this problem of the prevention of wound infection is of great importance. He also cites observations that were made during the war, particularly as regards the development of gas edema. He hopes that Friedrich's unfortunate term "freshening," which has become linked with the idea of primary suture of wounds, will be abandoned. This would be no loss, since the method is no longer in use. The term "surgical care of wounds" which is now generally applied is better. To what extent it is necessary to keep a wound open following the surgical toilet, or whether a partial closure is permissible, depends on the seriousness of the injury and on the type of the infection that must be feared. The more severe are the lacerations of the tissues, the more the wound is soiled and the more dangerous is the infectious material, the more urgent it is that the wound remain open; it may even be necessary to open the wound wider. The author further discusses the serologic prophylaxis of tetanus and of gas gangrene, pointing out that seroprophylaxis has replaced antisepsis. The use of serum for gas gangrene is not reliable as yet and a thorough surgical toilet of the wound is the most important factor in the prevention of gas gangrene. All necrotic portions must be carefully removed. If the work of the surgeon fails in this respect, the efforts of the serologist will likewise be in vain.

## Deutsches Archiv für klinische Medizin, Berlin

**182:** 261-372 (July 15) 1938. Partial Index

Changes in Bone Marrow and Hematopoiesis in Diseases of Liver and in Biliary Disorders. W. Tischendorf.—p. 261.
Investigations on Physiology of Gastric Motility: Internal Pressure of Healthy Stomach. K. Goette and K. Grosser.—p. 288.
Urogenital System and Articular Diseases. A. von Dzsinich.—p. 311.
*Aspects of Gastritis in Achylia of Pernicious Anemia: Gastroscopic Investigations. K. Lühr and M. Gülzow.—p. 327.
*Tonsils as Port of Entry and as Localization of Disease in Infectious Granuloma (Hodgkin's Disease). K. Bingold.—p. 338.
Work Test in Electrocardiographic Diagnosis of Angina Pectoris. A. Faleiro.—p. 347.

**Gastroscopic Investigations in Pernicious Anemia.**—Lühr and Gülzow point out that the increased protein content of the gastric juice of patients with gastritis has received considerable attention in recent years. Methods have been developed for the determination of the protein content of the gastric juice and increases have been observed in acute toxic gastritides as well as in a certain number of chronic gastritides. The stomach of patients with achylia has a rich bacterial flora, the digestion takes place under abnormal conditions and often there exists a deficiency of secretion. It was suggested by Katsch that the increased protein values of achylia are partly simulated and partly real. In the achylia concurring with pernicious anemia there nearly always exists an increased protein content and the question arose whether this increase is simulated or whether gastritic changes play a part. The cause of the secretory insufficiency of pernicious anemia is still in dispute; some maintain that the degenerative atrophy of the gastric mucosa is the primary condition, while others ascribe the atrophy to a gastritis. The authors decided to make gastroscopic studies on patients with pernicious anemia, although they are aware of the fact that the increase in the protein content of the gastric juice and the gastritis do not take a parallel course. A review of the literature on gastroscopy in pernicious anemia indicated that a total atrophy of the gastric mucosa is regarded as characteristic for pernicious anemia. The authors subjected a number of patients with pernicious anemia, in whom fractionated withdrawal of the gastric juice had disclosed an increase in the protein content, to gastroscopy. Six of these cases are described in detail. Besides atrophic processes, the authors discovered acute and chronic gastritic processes. The authors agree with those investigators who believe that gastritis plays an important part in the pathogenesis and in the course of pernicious anemia and oppose those who regard a "pure" atrophy of noninflammatory origin as characteristic for pernicious anemia. The gastroscopic observations complement the other material on this problem. The authors think that the increased protein values of the gastric juice of patients with pernicious anemia are probably partly caused by the gastritis.

**Tonsils in Hodgkin's Disease.**—Bingold points out that Hodgkin's infectious granuloma usually develops slowly and insidiously. Swelling of the cervical glands and less often of the axillary and inguinal glands, together with emaciation, call attention to the seriousness of the disease. Whereas hyperplasia of the cervical glands is quite frequent, it has been stated repeatedly that infectious granuloma does not involve the mucosa of the pharynx and of the tonsils. Although it is generally conceded that the port of entry is in the oral cavity, there are authorities who maintain that in Hodgkin's disease, in contradistinction to other lymphocytomas, the tonsils are not involved or that such an involvement is extremely rare. The author, however, observed cases in which tonsillitis and Hodgkin's infectious granuloma did not merely concur but in which the infectious granuloma attacked the tonsils. Moreover, careful anamneses revealed that in some cases a tonsillitis had been the beginning of the infectious granuloma. This tonsillar process may subside again, although some symptoms may remain until the infectious granuloma becomes manifest. The author describes the clinical histories of several cases in which the tonsillar symptoms predominated. In one of the patients

observed by him the characteristic symptoms of infectious granuloma were lacking, and not until the tonsils were subjected to microscopic examination was it possible to determine that the process was an infectious granuloma. The incipient infectious process of the tonsils may subside again, but how often this takes place is not known. Moreover, it is possible that the infectious granuloma is at first only a local disorder. Cases reported by Görke, Putschowsky and Wulstein seem to suggest this, because three years after radical treatment the patients were free from relapse. The author thinks that his observations stress the importance of a careful microscopic examination of extirpated tonsils in order to detect signs of Hodgkin's disease. He hopes that if evidence of this disease is thus found it might be possible to arrest a perhaps still local process by means of radical surgery and energetic roentgenotherapy and prevent a generalization of the disease.

## Klinische Wochenschrift, Berlin

**17:** 1033-1064 (July 23) 1938. Partial Index

Fat Organs and Their Significance for Metabolism, with Special Consideration of So-Called Brown Fat. W. Eger.—p. 1033.
Angina Pectoris in Uniovular Twins. G. W. Parade and W. Lehmann.—p. 1036.
Physiology and Pathology of Intermediate Fat Metabolism. H. G. Krainick and F. Müller.—p. 1040.
Behavior of Erythrocytes at Platinum Anode. A. Vogl.—p. 1042.
*Significance of Gordon Test for Diagnosis of Hodgkin's Disease. H. W. Sachs and W. Steffel.—p. 1043.
Regarding Production of Hyperglycemia by Means of Cerebrospinal Fluid. E. Fenz and F. Zell.—p. 1046.

**Gordon Test in Diagnosis of Hodgkin's Disease.**—Sachs and Steffel report their experiences with Gordon's test in the diagnosis of Hodgkin's disease. They used Gordon's method of intracerebral injection into rabbits: on material from patients in whom Hodgkin's disease had been histologically demonstrated, on material from patients with disorders other than Hodgkin's disease and on material from doubtful cases. On the basis of their observations they reach the conclusion that when the lymph node is still in the hyperplastic stage, that is, before the development of the typical granulation tissues, Gordon's test is of value for the diagnosis, because it is already positive at a time when the histologic diagnosis is not yet possible. It makes a diagnosis possible in cases in which the only lymph node available for exploratory excision does not yet show the typical granulation tissue. Moreover, it avoids the necessity of repeated exploratory excisions in cases in which, although several lymph nodes are available, the exploratory excision was made on one in which the histologic examination did not yet reveal the typical granulation tissues. However, the authors cite one case of generalized Hodgkin's disease in which Gordon's test was made on one lymph node that showed the histologic aspects of the disease and on one lymph node that merely showed signs of hyperplasia. The hyperplastic lymph node gave a negative reaction in Gordon's test. The authors admit that this one case does not permit generalizing conclusions but suggest that it shows that a definite diagnosis cannot be based on the outcome of Gordon's test, which is made on peripheral, still unchanged lymph nodes, when the disease is restricted to mediastinal or abdominal lymph nodes. For practical purposes the authors advise the use of half an extirpated lymph node for the histologic examination and preparation of the other half for Gordon's rabbit test, which is to be made if the histologic examination should prove negative.

## Medizinische Klinik, Berlin

**34:** 957-988 (July 22) 1938. Partial Index

Angina Pectoris. W. Weitz.—p. 957.
Essential Hypoglycemia and Hypotension. G. Graul.—p. 961.
*Endemic of Weil's Disease. J. Ehler.—p. 963.
Relapse Symptoms After Operations on Account of Gastric and Duodenal Ulcers and Their Treatment. H. Finsterer.—p. 966.
Myasthenic Symptoms and Their Dependence on Endocrine System. W. C. Meyer.—p. 969.
Vitamin C as Adjuvant in Therapy of Pulmonary Tuberculosis. E. Albrecht.—p. 972.

**Endemic of Weil's Disease.**—Ehler reports observations in the course of an endemic of Weil's disease, which occurred in a community of Czechoslovakia between March and October. Nearly all the patients (twenty-nine) were children of school age; two of the patients were adults, namely the teacher in the school attended by the children and his visitor. Search for the source of the infection disclosed that the water of the school well must have been responsible for the infections. Signs of infestation with rats were detected around the well as well as on a nearby creek, the polluted water of which probably entered the well by way of an overflow pipe at times when the water level of the creek was high. In eight of the patients who had severe jaundice it was possible to make serologic tests and in all these agglutination with Weil's Leptospira gave positive results, whereas agglutination tests with other organisms, such as typhoid or paratyphoid, gave negative results. The complement fixation with Leptospira for the demonstration of antibodies likewise produced positive results in all cases. Following remarks about the symptomatology and epidemiology of Weil's disease, the author says that, whenever cases of severe jaundice occur in numbers, Weil's disease should be thought of and a search should be made for Leptospira icterohaemorrhagiae. If this organism is discovered, measures can be taken to prevent additional cases.

## Zeitschrift für urologische Chirurgie, Berlin

**44:** 115-182 (July 16) 1938

Technic of Endovesical Resection of Prostate. W. Staehler.—p. 115.
*Changes in Arterial System of Kidneys During Hydronephrosis and Their Relations to Renal Function. K. Egger.—p. 138.
True Compensatory Hypertrophy of Kidney: Case. R. Riester.—p. 153.
Rigidity of Sphincter Vesicae in Women. B. Bibus.—p. 159.
Significance of "Psoas Rim Symptom" of Hutter. A. Stimpfl.—p. 165.
Pathologic-Anatomic Statistics on Pyelonephritis and Pyelonephritic Contracted Kidney. W. Hage.—p. 172.

**Arteries of Kidneys During Hydronephrosis.**—Egger describes the morphologic changes which the arterial system of the human kidney undergoes during hydronephrotic degeneration. He also makes an effort to explain how the circulatory conditions during hydronephrosis act on the function of the kidney. He shows that retention of urine may impair the renal function in that by dilating the calices it strangulates the interlobar arteries and thus produces an ischemia in the renal parenchyma. In the same manner the retention produces an obstruction in the interlobar veins and thus a venous stasis results in the kidneys. Ischemia and venous stasis together with the pressure of the retained urine produce an atrophy of the renal tissues. If the stasis of hydronephrosis is relieved in a cautious manner there is the possibility that the parenchyma which is not yet destroyed will recover, for the increasing blood perfusion may promote a functional and even a partial anatomic restoration of the renal tissues. A too sudden relieving of the hydronephrosis may be followed by a further impairment of the renal function. This is probably due to acute circulatory disturbances, which in turn are produced when large quantities of blood enter a diseased arterial system under high pressure. Neural reflexes may also play a part.

## Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

**82:** 3411-3538 (July 9) 1938. Partial Index

Gastrojejunocolic Fistula. C. Mendes de Leon and J. H. Motmans.—p. 3430.
*Heredity of Epilepsy. G. P. Frets.—p. 3437.
Indications for Surgery on Sympathetic Nervous System. W. F. Suermondt.—p. 3443.

**Heredity of Epilepsy.**—Frets reports the clinical history of a woman, aged 34, who had had epileptic attacks since her fourteenth year. It was found that a nephew of the woman, as well as an uncle, an aunt and a great aunt, all of them relatives of the father, likewise had epilepsy. Thus it seems that epilepsy was hereditary in the father's family. When recessive heredity is assumed, the mendelian law makes it necessary to assume the presence of the hereditary factor for epilepsy in the mother as well. The hereditary factor for epilepsy may be present without there being evident cases of it in the family. The author further reviews the results of recent investigations on the heredity of epilepsy. He cites Rüdin, van Londen, Luxemburger, Conrad, Franke and others, and he shows that the figures on the heredity of epilepsy are much lower than are those on the heredity of dementia praecox. He emphasizes that the etiology and heredity of epilepsy require further investigation.